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History of Mankind: Cultural and Scientific Development

VOLUME ONE

# PREHISTORY and the BEGINNINGS of CIVILIZATION

Jacquetta Hawkes
Sir Leonard Woolley

Under the Auspices of UNESCO

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**Part One** *Jacquetta Hawkes* PREHISTORY: This volume is concerned with man's prehistoric past. Starting with the early ape-men and their first groping efforts to make tools, control fire and to form a language, it passes on to the emergence of *Homo-sapiens*, the differentiation of races and the peopling of the Americas. The material culture, religion and magnificent artistic creations of these latest Old Stone Age hunters are fully considered and illustrated. The story is taken down to the domestication of plants and animals in South-west Asia and the earliest spread of farming in Europe and Asia. There is also an account of the origins of agriculture in the New World. Men could now live a settled life and develop fine crafts; the way to civilization lay open before them. While presenting the facts of archaeology, the author has throughout attempted to give some insight into human experience during the hundreds of thousands of years of our prehistory.

**Part Two** *Sir Leonard Woolley* THE BEGINNINGS OF CIVILIZATION: The Bronze Age saw the birth of civilization as contrasted with the conditions of the Neolithic period. By the end of that period, great parts of Europe, Asia and Africa were sparsely peopled by farmers living in small but largely self-sufficient settlements. Out of this virtually static condition was evolved the modern world. This volume describes easily and vividly the revolution in man's way of life and thought which began first in Mesopotamia and in the valleys of the Nile, the reasons for it and the way in which it came about.

It continues with the grouping and distribution of mankind throughout the Bronze Age, the gradual urbanization of civilizations, the social and economic structures, the evolution of industries in pottery, glass, ivory and textiles and the development of science, fine arts, music and literature. Other chapters deal with religion, education, communication and travel. The book concludes with descriptions of the conditions of civilized life at the end of the thirteenth century, B.C.

*Prehistory and Beginnings of Civilization*
Hawkes and Woolley
George Allen and Unwin Ltd

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HISTORY OF MANKIND

CULTURAL AND SCIENTIFIC DEVELOPMENT

VOLUME I

PREHISTORY AND THE BEGINNINGS OF CIVILIZATION

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PUBLISHED FOR THE
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SCIENTIFIC AND CULTURAL DEVELOPMENT
OF MANKIND

BY

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# HISTORY OF MANKIND

## CULTURAL AND SCIENTIFIC DEVELOPMENT

VOLUME I

BY JACQUETTA HAWKES
AND SIR LEONARD WOOLLEY

# PREHISTORY AND THE BEGINNINGS OF CIVILIZATION

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# FOREWORD

Director-General of UNESCO

At a time when man is preparing to launch out from this planet into space, it is well that History should hold him in contemplation of his trajectory through the ages.

Never before, indeed, has he shown so searching a curiosity about his past or such jealous care to preserve its vestiges. It is as though in some mysterious way a balance were now maintained in his thought between the exploration of space and that of time, the extroversion of the one being offset by the inwardness of the other.

Be that as it may, never more than now, when man finds himself hurtling at vertiginous speed towards a wondrous future, has there been a great need for the function of memory to ensure for mankind the appropriation of its creative actuality. If consciousness were not thus rooted in such reflection on its own process of becoming, many of the inventions we hail as conquests and advances would be no more than the uncontrollable workings of an alienated destiny.

To evoke this retrospective awareness is the first thing that this work which we now have the honour of introducing to the public sets out to do; it is an attempt to sum up the heritage of civilization to which we owe our present élan.

The ambition to write a universal history is a very old one indeed. Many have tried their hand at it before, particularly in the classical epochs—not without merit, nor without success. The present work belongs to that noble line of great syntheses which seek to present to man the sum total of his memories as a coherent whole.

It has the same twofold ambition, to embrace the past in its entirety and to sum up all that we know about that past. And it adopts the same intellectual approach—that of the interpretative as opposed to the descriptive historian—reducing events to their significance in a universal frame of reference, explicit or implicit.

However, this *History of Mankind* parts company with its predecessors on several essential points. In the first place, it deliberately confines itself to shedding light on one of mankind's many aspects, its *cultural and scientific development*.

In so doing it departs from the traditional approaches to the study of history, which, as we know, attach decisive importance to political, economic and even military factors. It offers itself as a corrective to the ordinary view of man's past. And those who initiated the enterprise may well have thought at first that this was, in itself, sufficiently useful and original for them to dispense with any further aim.

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Admittedly, it rests with the science of history to decide objectively, *a posteriori* and according to the case, on the relative importance of the different elements and factors in particular situations. To that extent the approach deliberately adopted in this history may well be said to be an *a priori* postulate. This is the very postulate on which UNESCO itself is based, namely, the conviction that international relations, in their ultimate reality, are determined not merely by political and economic factors and considerations but spring as well, and perhaps even more surely, from the capabilities and demands of the mind.

Nevertheless, even from the strictly scientific point of view, this History, deliberately partial though it be, may well claim that, in restoring to the achievements of culture and science their full reality and significance, it has made an essential contribution to that sum of factual knowledge and right understanding which a complete history aspires to offer.

But the originality of the enterprise does not stop there. In point of fact, that is where it begins. For the facts of which this History treats are no ordinary ones. To put them back in their proper place is not merely to fill a long-standing gap and thus complete the sum, restoring its balance to the whole. It is to discover a new dimension of the historical object, perceptible only when approached from a particular intellectual angle.

Cultural or scientific facts, whatever their subject-matter, means, cause, pretext or circumstances, are essentially thoughts of man about man.

This is obvious in the cultural sphere, every value being a human ideal. But it is no less true of science; for apart from the fact that truth, too, is a value, the essence of science is not knowledge, but the method by which knowledge is gained, the rule the mind prescribes itself in order to attain it; and every rule is a form of reflection and self-discipline; that is, doubled consciousness.

Thus, the history of what has no doubt been too simply described here as 'the cultural and scientific development of mankind' is, strictly speaking, the story of how, through the ages, men—individually and collectively—have conceived of humanity. Or, to be more correct, have conceived of *their* humanity, that is, the universal aspect of their experience. In short, the subject of this work is the gradual development, in its most expressive manifestations, of the consciousness of the universal in man.

As will be seen, great care is taken to describe the exchanges and influences which link the different foci of civilization across space or time. We are shown how this web of reciprocal influences is becoming more closely woven as spatial communications grow more numerous and rapid and relations in time more intensive.[1] Indeed by no means the least interesting

[1] Even in time, relations are reversible—not, of course, through any real causation, but owing to the perpetual reappraisal of the significance of events that takes place in the course of man's constantly renewed, and renewing, retrospection.

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feature of this work is the stress it lays upon this still too little known aspect of historical reality in which the 'intellectual and moral solidarity of mankind' referred to in the Preamble to UNESCO's Constitution can really be seen at work.

Yet even this is not the decisive discovery. That lies not so much in the evidence of interrelation between the many and varied civilizations as in the fact, manifest in all forms of culture and science, that every civilization implies, produces or invokes an image of man in terms of the universal.

This immanence of the universal in every cultural and scientific experience is what gives its essential character to the spiritual solidarity of mankind. And it is in this form that that solidarity can serve as the foundation for the true peace described in UNESCO's Constitution, whereas the effect of intercultural relations upon the interplay of the forces conducive, in a given situation, to peace is, as well we know, extremely complex and indirect, and therefore contingent. In fact it is because the object of this History, as already pointed out, is the development of the consciousness of this solidarity that UNESCO regards such an undertaking as both vital and necessary.

But straightway we are faced with another fact, no less rich in implications. In the actual experience of science and culture, sense and style, which constitute the universal element, remain indissolubly bound up with the singular act of invention or creation from which they derive. It may truly be said both of science and of culture, regarded as experiences, that 'the more one concentrates on the particular, the more universal one becomes'. And it is only by repeating the various operations of the act of creation, reduced to their objective characteristics—which make up what we call method—or by subjective communion with the mental atmosphere of that act—which is what we call intuition—that another person can understand and assimilate this sense and style.

It follows that for a history which aims to keep in constant touch with experience and restore it in its contingent truth, scientific and cultural facts have significance only for certain individuals, namely those who are capable of applying these methods and of exercising this intuition which give access to the secrets of creativeness in its unique aspects. However, to possess this ability, there is no doubt that one must belong to the particular context of civilization in which such unique phenomena occur. Accordingly a concrete history of science and culture can only be written from a plurality of viewpoints corresponding to the variety of civilizations.

To acknowledge the fact that there is more than one civilization is not to deny in any way the continuity or solidarity of human development. On the contrary, the study of the interrelations, across time and space, of ideas, values and techniques restores this sense of continuity and solidarity, which have never before been so definitely and convincingly established as in this History. Similarly, to be aware of the originality of the works and symbols

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which make up each civilization is not to gainsay the universality of the human mind. As we have seen, true universality is no more than a dimension of this consciousness of a sense or style, which opens out to the potential totality of mankind only by rooting itself in the particularity of its initial emergence.

The classical rationalism of the West conceived the history of the human mind as a process of development in which all scientific and cultural facts are arranged in order with reference to a single, constant subject that is universal by nature. There is no need to plunge into a philosophical discussion on ontological humanism in order to expose this myth. It would be only too easy, now of all times, to show how into this allegedly universal subject has been projected, out of pride or sheer naïveté, the subjectivity, in more or less sublimated form, of certain personalities eminently representative of their epoch, civilization or race.

The work you are about to read represents the first attempt to compose a universal history of the human mind from the varying standpoints of memory and thought that characterize the different contemporary cultures.

But in doing so, its main purpose was not to banish all subjectivity of interpretation. Indeed, such a pretension could not be entertained in a history which seeks to assess the significance of events and which takes as its starting points the positions adopted by the various cultures. For there is a kind of subjectivity, co-substantial, as it were, with culture, which causes the perspective opened by each culture on the universal in man to be a projection of that culture's humanity in its own particular circumstances. The originality of this attempt at a universal history lies in its having taken for its frame of reference the multiplicity of contemporary cultural perspectives and projections. For the first time an attempt has been made to present, with respect to the history of consciousness, the sum total of the knowledge which the various contemporary societies and cultures possess and a synthesis of the conceptions which they entertain. For the first time an attempt has been made to offer a history of human thought which is the product of the thought of mankind in every aspect of its present complexion. A universal history indeed, and doubly so—in both its object and its subject.

This aspiration, which is the essence of the whole undertaking, has determined the choice of method.

The History is the work, not of a team with a homogeneous cultural background, but of an International Commission which, by its very composition and even more by the spirit pervading it, embraces all the varied cultural traditions and modern ideologies which form the spiritual framework of our present-day world. What is more, the International Commission made it a rule that the contributions of the many scholars whose services it enlisted be submitted to the scrutiny of the National Commissions which, in the Member States of UNESCO, group together persons particularly qualified to

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represent the fields of education, science and culture. Subject always to the overriding considerations of scientific truth, the observations received in the course of these extensive consultations were scrupulously taken into account in drawing up the final text. Never before has what I may call the decentralization of viewpoints and interpretations been carried so far in the science of history.

Accordingly the work is also an act; for this historical study is itself a cultural achievement calculated to influence, by its spirit and its methods, the present trend of culture. And that, no doubt, is its ultimate end. For just as the awareness of mankind's intellectual and moral solidarity to which it leads stems less from the discovery of the interrelations of the past than from the effort of synthesis by which mankind seeks to apprehend the whole compass of its scientific and cultural heritage, so the essential feature of this effort is not so much the complete restitution of the object which it is designed to achieve as the fact that the whole of the subject as it exists today is taking part in it and thus affirms its own unity in the process of achieving it.

In this humanism, whose universality springs not from a unique abstract nature but is being gradually evolved, on the basis of a freely acknowledged diversity, through actual contact and a continuous effort at understanding and co-operation, UNESCO recognizes both its own *raison d'être* and its guiding principle. The unity of mankind, we believe, has to be patiently built up, through mutual respect for the cultures which diversify it without dividing it, and by the establishment of more and more centres of science which spread man's technological power throughout the world, fostering equality of opportunity for progress and for the genuine preservation of his dignity.

Such, then, are the principal ideas and essential features of this work; they are, at the same time, the very reasons which led UNESCO, as the educational, scientific and cultural organization of the United Nations, to conceive the project and assist in its execution.

The author of this History is not UNESCO; it is the International Commission which, since 1950, has directed this venture in complete intellectual independence. It is to the Commission, therefore, and to it alone, that the full credit for this work is due. And at the same time—allow me to state—it also bears the sole responsibility for its scientific worth.

UNESCO is, however, proud to have organized this work and to have made possible its accomplishment by providing the necessary funds, administrative machinery and international background. In that sense this great venture, without precedent in many respects, is also in some measure its work, too.

It is, therefore, my pleasant duty to express the Organization's gratitude to all those who have, to whatever degree, participated in this undertaking and contributed to its success. Above all its thanks are due to the distinguished members of the International Commission and to its eminent Chairman, Professor Paulo E. de Berrêdo Carneiro, who for thirteen years have given

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unsparingly of the wealth of their knowledge and talents, with a devotion and selflessness equalled only by the nobility of their thought. In this concept of scientific and cultural development in which consciousness is an act and all reflection a creation, it may be said without fear of exaggeration that, in presenting this vast panorama of the past history of the human mind, such as never was before, they have made a powerful contribution towards the advent of a consciousness of civilization on a scale encompassing the whole of mankind. With all my admiration, I wish to express to them UNESCO's gratitude.

RENÉ MAHEU
*Director-General*

UNITED NATIONS EDUCATIONAL, SCIENTIFIC
AND CULTURAL ORGANIZATION

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# PREFACE

PROFESSOR PAULO E. DE BERRÊDO CARNEIRO
*President of the International Commission for a History of the Scientific and Cultural Development of Mankind*

Among the great tasks assigned to UNESCO by its Constitution is the duty to promote and encourage mutual knowledge and understanding throughout the world. While many of the divergencies which divide peoples date from a distant past, an analysis of their historical antecedents discloses links which draw them nearer to one another, brings to light their contributions to a common patrimony of humanity, reveals the ebb and flow of cultural exchanges and emphasizes their increasing tendency to become integrated into an international community.

Beyond differences of race, climate, economic structure and systems of ideas, history shows the fundamental identity of the various human groups, making it possible to discern, in many cases, profound analogies among the transformations they have undergone from the Palaeolithic era down to the present time. If we consider the human species as a whole, we perceive that the course of its evolution has been accomplished from one region and one people to another by way of a series of oscillations, greater or lesser in extent, longer or shorter in duration. The different civilizations which have arisen in the course of the ages correspond to distinct phases and patterns of this general movement. Almost every one of them is to be found somewhere in the world of today. Contemporary society appears as a mosaic in which the most widely-differing cultures adjoin and confront each other.

It was, I think, in order to know them better and to strengthen their solidarity that UNESCO took the initiative of entrusting to historians, men of science and of letters, recruited from all parts of the world, the task of preparing and of publishing this work. This, at least, is how I have understood the mandate of the International Commission over which I have the honour to preside. Our task was not to draw up a philosophy of history in the light of the economic, intellectual and moral laws which may govern social development, but to describe, from a universal standpoint, the contribution of each age, each region, each people to the scientific and cultural ascent of humanity.

In the official reports which I have presented since 1951 to the General Conference of UNESCO, will be found a detailed account of the steps taken in implementing this project which originated in a resolution submitted to the second session of the General Conference held in Mexico City in 1947. The idea had been put forward in 1946 by Dr Julian Huxley, then Executive Secretary of the Preparatory Commission for UNESCO:

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'The chief task before the Humanities today would seem to be to help in constructing a history of the development of the human mind, notably in its highest cultural achievements. For this task, the help of art critics and artists will be needed as well as of art historians; of anthropologists and students of comparative religion as well as of divines and theologians; of archaeologists as well as of classical scholars; of poets and creative men of letters as well as of professors of literature; as well as the whole-hearted support of the historians. Throughout, of course, the development of culture in the various regions of the Orient must receive equal attention to that paid to its Western growth. Once more, UNESCO can help by being true to its many-sidedness, and by bringing men together from all these various fields to help in one or other facet of this huge work.' (UNESCO: *Its Purpose and Its Philosophy* [London, 1946]).

Several preparatory meetings were held and preliminary studies made in 1947 and 1948 with the participation of Professors Carl J. Burckhardt, Lucien Febvre, Joseph Needham, Georges Salles, Taha Hussein, and UNESCO officials, among whom Dr Julian Huxley, then Director-General, Mr Jean Thomas and Professor Pierre Auger. In 1949, Professors Lucien Febvre and Miguel Ozorio de Almeida were asked to prepare general reports on the basis of which the General Conference, at its fourth session, recommended that the work should proceed immediately.

In the same year a committee of experts was called to draft the plan to be submitted to the General Conference for the elaboration of a scientific and cultural history of mankind. It included the following scholars: R. Ciasca, L. Febvre, M. Florkin, J. Needham, J. Piaget, P. Rivet and R. Shryock. In opening the proceedings, Dr Jaime Torres-Bodet, at that time Director-General, evoked the spirit in which he considered the work should be accomplished:

'Through UNESCO, humanity must come to realize its common past and understand the significance of the sum total of endeavour, invention and enlightenment which have gone to make up the heritage we seek to serve today. If we can regard this moment in the world's history as UNESCO's hour, it is thanks to the slow and often unnoticed growth of an outlook shared by all men, which is now beginning to take shape as the outlook of Mankind. . . .'

'We seek only to draw up the table of the major cultural events which have shaped Man's existence and slowly brought civilization into being. . . .'

'The important thing is to embark on it with the will to succeed and in a spirit of serene and dispassionate objectivity. . . .'

'Nevertheless, by publishing today a synthesis of our present knowledge of *humanity's scientific and cultural history*, UNESCO, far from lulling the critical spirit to sleep, will spur it to new and eager research. It is my profound conviction that there is nothing in the nature or the present state

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of historical science precluding the making of such a synthesis; indeed all circumstances invite us to it.'

In accordance with a resolution of the General Conference of 1950, consultations were held with the International Council of Scientific Unions (ICSU) and the International Council for Philosophy and Humanistic Studies (CIPSH) as to the appointment of an international commission to undertake, on behalf of UNESCO, full responsibility for the preparation and execution of the work. The following experts nominated by these two councils were invited by the Director-General to become active members of the Commission: Professors Homi Bhabha (University of Bombay), Carl J. Burckhardt (Switzerland), Paulo E. de Berrêdo Carneiro (University of Brazil), Julian Huxley, FRS (United Kingdom), Charles Morazé (University of Paris), Mario Praz (University of Rome), Ralph E. Turner (Yale University), Silvio Zavala (University of Mexico) and Constantine K. Zurayk (University of Damascus).

The International Commission met for the first time in December 1950 and again in March 1951 in Paris. It decided during these two meetings to invite a number of distinguished persons to become Corresponding Members, and to set up an Editorial Committee, under the chairmanship of Professor Ralph E. Turner, with Professors Constantine K. Zurayk and Charles Morazé as members. The Commission did me the honour of electing me as its President, with Dr Julian Huxley and Professor Carl J. Burckhardt as Vice-Presidents. A Bureau was created comprising the President, the Vice-Presidents and the Chairman of the Editorial Committee. Dr Armando Cortesao, a member of the Department of Cultural Activities of UNESCO, initially responsible for the secretariat of the Commission, was unanimously elected Secretary-General. In 1952 he was succeeded by Dr Guy S. Métraux.

Between 1952 and 1954 new members were added to the International Commission to enlarge its geographical, cultural and philosophical representation. The following scholars were appointed in agreement with the Director-General of UNESCO: Professors E. J. Dijksterhuis (Netherlands), Jacques Freymond (Switzerland), Mahmud Husain (Pakistan), Hu-Shih (China), Erik Lönnroth (Sweden), R. C. Majumdar (India), Percy E. Schramm (Federal Republic of Germany), Ali A. Siassi (Iran), and J. Pérez Villanueva (Spain).

As early as 1952 the International Commission approached scholars of countries which, at the time, were not members of UNESCO but which represented important cultural areas. Invitations were sent to national academies of sciences and arts, but met with no response. It was only in 1955 that the International Commission was able to welcome as new members historians and scientists from the Union of Soviet Socialist Republics and the People's Republics of Czechoslovakia, Hungary and Poland.

Since 1954 the Bureau, acting as delegate of the International Commission

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with additional responsibilities placed on it by the General Assembly, has been enlarged to comprise the President and six Vice-Presidents as follows: Sir Julian Huxley (United Kingdom), Professor R. C. Majumdar (India), Professor Ralph E. Turner (United States of America), Professor Gaston Wiet (France), Professor Silvio Zavala (Mexico), and Professor A. A. Zvorikine (Union of Soviet Socialist Republics). Professor Louis Gottschalk (United States of America) was unanimously elected as a further Vice-President in 1961.

The first publication which the International Commission initiated, on the proposal of Professor Charles Morazé, was a quarterly review, the *Journal of World History*. Professor Lucien Febvre was the Editor until his death in 1956, when it came under the supervision of the Bureau, with Dr François Crouzet and Dr Guy S. Métraux as its editorial staff.

The main function of the *Journal of World History* has been to provide the International Commission with material for the final compilation of the History—documentary or bibliographical details about problems which have so far remained obscure; translations of documents which may have appeared desirable; contributions to the History itself. This review has also enabled scholars in all countries to take part in an exchange of views on questions of interpretation and the actual presentation of the History.

The *Journal of World History* represents a considerable contribution on the part of the International Commission to historical knowledge and towards a better understanding of historical processes. Composed of articles of the highest scientific quality which bear the signature of scholars from every country and which express the most diverse ideological trends, it foreshadows to some extent the great work for which it has furnished basic materials.

The preparation of the History was examined in detail during the first and second meetings of the International Commission. Several courses of action presented themselves: the Commission could draft the final text, or it could be entrusted to a single editor, or to independent authors. It was decided that, while the Commission would retain the full authority conferred upon it by the General Conference of UNESCO, the wisest course would be to select individual author-editors for each of the six volumes. The author-editors would be fully responsible for the text, but they would work under the supervision of, and in collaboration with, the Editorial Committee and the Commission; they would benefit by the assistance of scholars, designated by them, to deal with certain chapters; and, if necessary, sections could be referred to specialists.

On the recommendation of the Editorial Committee, author-editors for five of the six volumes were at this time appointed. For Volume I, Jacquetta Hawkes and Henri Frankfort, both of the United Kingdom. On the death of Professor Frankfort in 1954, the late Sir Leonard Woolley (United

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Kingdom) was appointed to write the second part of this volume. For Volume III, René Grousset (France), with two co-authors, Vadime Elisséeff and Philippe Wolff (France). Professor Gaston Wiet (France) took over the author-editorship of this third volume in 1953 on the death of Professor Grousset. For Volume IV, Louis Gottschalk (United States of America); for Volume V, Jorge Basadre (Peru), who afterwards resigned and was replaced later by Professor Charles Morazé (France); and for Volume VI, K. Zachariah (India), who was succeeded in 1956 by Dr Caroline F. Ware (United States of America), H.E. Dr K. M. Panikkar (India), and the late Dr J. M. Romein (Netherlands).

In 1953 the late Professor Luigi Pareti (Italy) was appointed author-editor of Volume II, with Professors Paolo Brezzi and Luciano Petech of Italy as assistants.

By the spring of 1952 a first draft plan of the History was in circulation. Through the active interest of the author-editors, the members of the International Commission, and scholars consulted throughout the world on the initiative of the International Commission, this plan was slowly revised to constitute a general guide for the elaboration of the six volumes.

At a meeting of the International Commission in February 1954 it was decided, on my proposal, to include in its membership the author-editors of the six volumes and the editor of the *Journal of World History*. This measure was designed to enable those primarily responsible for the text of the volumes to take part in discussions and so to make a more effective contribution to the direction of the activities of the International Commission. In addition it was decided that one single body—the Bureau of the Commission—should be made entirely responsible for the co-ordination of the Commission's work. To ensure the unity of style and presentation essential to a work of such high intellectual standing and covering so wide a field, Professor Ralph E. Turner was entrusted with the task of editing the English texts.

In the course of the execution of its programme the International Commission benefited by the co-operation of UNESCO and of the General Conference which, at several of its sessions, had the opportunity to examine the work plans prepared for the History, and on two occasions took decisions which markedly influenced our work. The Ninth General Conference held in New Delhi in 1956 recommended that the texts of all volumes be submitted to the National Commissions set up in the Member States. The objective was to assist the International Commission in obtaining for each volume additional critical materials to enable the author-editors to revise and to perfect their texts. While not all National Commissions responded, the comments which were received proved most useful. All the author-editors have conscientiously noted the criticisms received and have taken them into account, wherever possible, when revising their texts. Further-

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more, the International Commission has sought the advice of experts on several points.

Again at the invitation of the General Conference, following its tenth meeting held in Paris in 1958, the International Commission decided to appoint a number of historians to advise the Bureau and the author-editors on possible modifications of the text of each volume of the History, in the light of comments and criticisms received, and to suggest editorial notes on controversial issues. This step had become necessary as Professor Turner's illness had prevented him from accomplishing the editorial work. In pursuance of this policy, and in agreement with the members of the Bureau and with the author-editors, I selected a number of eminent historians, of different nationalities, particularly qualified to act as special consultants. Thus, at the end of each chapter of all volumes the reader will find grouped together editorial notes and bibliographical references that will provide him with summaries of historical opinions on those questions which can be variously interpreted.

The International Commission plans to issue a supplement to Volume VI, *The Twentieth Century*. While the first part treats of the History of our age in the same way as the history of previous periods was considered in all the volumes, this second tome will be devoted to an open debate on the main trends in scientific and cultural development at mid-century.

The six volumes include line drawings prepared by Mrs Stella Robinson at the request of the author-editors, photographic plates assembled by the Secretariat of the International Commission in co-operation with the author-editors and their assistants, and maps drawn specially by the Swiss firm Hallwag, A.G.

At the time of publication I must recall with gratitude and regret the memory of those scholars whom the International Commission had the misfortune to lose in the course of its work and who contributed so much to the achievement of its task: Professors René Grousset, Henri Frankfort and Kd Zachariah, Sir Leonard Woolley, Professors Luigi Pareti, Lucien Febvre and J. M. Romein.

I must hereby express, on behalf of the International Commission, my gratitude to the General Conference of UNESCO which made this project possible, to the Director-Generals, Messrs. Julian Huxley, Jaime Torres-Bodet, Luther Evans, Vittorino Veronese and René Maheu, and to the Secretariat of UNESCO which, through ten years, has extended assistance and guidance on every possible occasion.

The International Commission is greatly indebted to the author-editors who, often under difficult circumstances, fulfilled their task with the highest competence and devotion; to its Vice-Presidents, who constitute the Bureau for assuming with me full responsibility for every phase of the execution of this project; and in particular to Professor Ralph E. Turner, Chairman of

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the Editorial Committee, for the elaboration of the general plan of the History and for his whole-hearted dedication to the success of the work to which he brought his own personal outlook of an integrated world history. I am particularly happy to acknowledge herewith the co-operation of the Corresponding Members, the consultants and the translators, whose work proved invaluable for the completion of this project.

The International Commission benefited throughout its work by the advice of the official Observers of the International Council of Scientific Unions, Professor R. J. Forbes; of the International Council for Philosophy and Humanistic Studies, Sir Ronald Syme; and of the International Social Sciences Council, Professor F. H. Lawson.

Lastly, I would like on behalf of the International Commission to thank the Secretary-General, Dr Guy S. Métraux, and his staff for their active and faithful collaboration which has contributed so much to the success of this scientific and cultural history of mankind.

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# NOTE ON THE EDITORIAL TREATMENT OF VOLUME I

The original text of Jacquetta Hawkes and Sir Leonard Woolley was submitted to all the National Commissions for UNESCO and to a number of specialists selected by the International Commission for a History of the Scientific and Cultural Development of Mankind.

All the comments which were made available to the International Commission on these original texts were communicated to the author-editors who used them widely in revising their manuscript. In the case of Part I, by Jacquetta Hawkes, the final revised text was entrusted to Professor H. G. Bandi, of the University of Berne, Switzerland, who was asked to prepare notes on major points at issue in order to complement the information in the manuscript or to summarize the thought of various schools on disputed questions.

Professor Bandi, in preparing the notes (translated by Ann E. Keep), utilized the comments of the following scholars:

Dr D. C. Baramki, American University, Beirut.

Professor R. M. Berndt, University of Western Australia, on behalf of the Australian National Advisory Committee for UNESCO.

Professor K. Birket-Smith, University of Copenhagen, Corresponding Member of the International Commission.

The late Professor A. C. Blanc, Director of the Institute of Palaeontology, Rome, on behalf of the Italian National Commission for UNESCO.

The late Professor F. S. Bodenheimer, Corresponding Member of the International Commission, Hebrew University.

Dr P. Bosch-Gimpera, Secretary-General, International Union of Anthropology and Ethnography, Mexico, D.F.

Professor J. G. D. Clark, Peabody Museum, Harvard University, Cambridge, Mass.

Dr H. B. Collins, Bureau of American Ethnology, The Smithsonian Institution on behalf of the United States National Commission for UNESCO.

Professor C. S. Coon, University of Pennsylvania.

Professor G. F. Debetz, Institute of Ethnography, Moscow, on behalf of the Commission of the USSR for UNESCO.

Professor W. Koppers, University of Vienna, on behalf of the Austrian Commission for UNESCO.

Professor P. Martinez del Rio, University of Mexico.

Professor S. Mizuno, Kyoto University, on behalf of the Japanese National Commission for UNESCO.

Dr J. Neustupný, Department of Prehistory, National Museum, Prague, on behalf of the Czechoslovak Commission for Co-operation with UNESCO.

Professor C. A. Nordman, Helsinki, on behalf of the Finnish National Commission for UNESCO.

Professor Luis Pericot García, University of Barcelona.

Professor H. D. Sankalia, Deccan College, Poona.

Professor A. Sommerfelt, Corresponding Member of the International Commission, on behalf of the Norwegian National Commission for UNESCO.

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Dr W. C. Sturtevant, Bureau of American Ethnology, Smithsonian Institution, on behalf of the United States National Commission for UNESCO.

Professor André Varagnac, Conservateur en Chef du Musée des Antiquités Nationales, on behalf of the Commission of the French Republic for Education, Science and Culture.

Professor John A. Wilson, Corresponding Member of the International Commission, Oriental Institute, University of Chicago.

In addition, the comments and suggestions of the following scholars were made available to the International Commission through the National Commissions for UNESCO in their respective countries:

Professor M. Almagro Bach (Spain), the University of Madrid.

Professor K. Jazdzewski and Maria Chmielewska (Poland), the University of Lodz.

Dr B. Klima (Czechoslovakia), Institute of Archaeology, Prague.

Dr Björn Kurten (Finland).

Professor M. I. Nestor (Rumania), the University of Bucharest.

Professor S. Paranavitane (Ceylon), the University of Ceylon.

Dr F. H. H. Roberts (United States of America), Bureau of American Ethnology, The Smithsonian Institution.

Professor M. Sauramo (Finland).

Professor L. Sawicki (Poland), Centre of Palaeolithic Studies of the Polish Academy of Sciences.

Professor M. Senyürek (Turkey), the University of Ankara.

Dr R. S. Solecki (United States of America), Division of Archaeology, United States National Museum.

Dr T. D. Stewart (United States of America), United States National Museum

The Academy of Sciences of Bulgaria, on behalf of the National Commission for UNESCO, the Indian National Commission for UNESCO, Members of the Faculty of the Hebrew University on behalf of the Israel National Commission for UNESCO, the Afghanistan National Commission for UNESCO and the Ministry of Education, Pakistan, sent observations which the International Commission acknowledges herewith most gratefully.

Likewise, in the case of Part II, by Sir Leonard Woolley, the reports and observations were communicated to the author who used them to amend his text, occasionally redrafting material or making additions. The specialists responsible for the most important of these modifications are indicated in the footnotes appended to the relevant passages.

It had been Sir Leonard's intention to reserve certain contributions for incorporation as separate footnotes, either because they seemed to him to warrant separate presentation, or because they could be considered only marginal to his own study. Sir Leonard had also prepared the elements of a discussion on certain points at issue. Having reviewed as a whole both the comments of scholars consulted and the relevant arguments advanced by Sir Leonard Woolley, Professor Ralph E. Turner, Vice-President of the International Commission, then indicated the observations which, in his opinion, particularly justified retention.

Sir Leonard Woolley died before the work could be completed. The critical comments submitted by scholars, together with the notes of Sir Leonard Woolley

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and of Professor Turner, were entrusted to Professor Jean Leclant of the University of Strasbourg.

Thus, Part 2 of Volume I of the *History of Mankind: Cultural and Scientific Development* includes the notes originally designed by Sir Leonard Woolley to accompany his own text, the observations and discussions of the scholars consulted by the International Commission, and lastly the additions made by Professor Leclant who was responsible for the compilation and editing of all notes and comments with the co-operation of the Secretary-General of the International Commission.

The greatest possible care has been taken to ensure that the reader should always be able to identify immediately the type of note concerned. The difficulty of achieving a coherent presentation of extremely hetereogenous material, without the benefit of Sir Leonard Woolley's guidance, should, however, be borne in mind.

The comments of the following scholars were used in elaborating the notes:

Dr D. C. Baramki, American University, Beirut.

Professor J. M. Casal, Musée Guimet, Paris.

Professor A. Caquot, Ecole des Hautes Etudes, Paris.

Professor I. M. Diakonoff, Oriental Institute, Leningrad, on behalf of the Commission of the USSR for UNESCO.

Professor S. J. Gasiorowski, University of Cracow, on behalf of the Polish National Commission for UNESCO.

Dr G. F. Ilyin, Institute of Oriental Studies, Academy of Sciences of the USSR, on behalf of the Commission of the USSR for UNESCO.

Professor Shigeki Kaizuka, Corresponding Member of the International Commission, Institute for Humanistic Science, Kyoto University, on behalf of the Japanese National Commission for UNESCO.

Professor E. Laroche, University of Strasbourg.

Professor R. C. Majumdar, Vice-President of the International Commission, Calcutta.

Professor J. Maluquer de Motes, University of Salamanca.

Professor D. J. Mulvaney, Lecturer in History, University of Melbourne, on behalf of the Australian National Advisory Committee for UNESCO.

Professor F. Schachermeyr, University of Vienna, on behalf of the Austrian Commission for UNESCO.

Professor A. Sommerfelt, Corresponding Member of the International Commission, University of Oslo, on behalf of the Norwegian National Commission for UNESCO.

Dr W. C. Sturtevant, Bureau of American Ethnology, Smithsonian Institution, on behalf of the United States National Commission for UNESCO.

Professor R. E. Turner, Vice-President of the International Commission, Yale University, New Haven, Conn.

Dr A. A. Vaiman, Moscow, on behalf of the Commission of the USSR for UNESCO.

Dr L. V. Vasilyev, Institute of Sinology, Academy of Sciences of the USSR, on behalf of the Commission of the USSR for UNESCO.

Professor B. L. van der Waerden, Zurich.

Professor John A. Wilson, Corresponding Member of the International Commission, University of Chicago.

Professor A. P. Yushkevich, Institute of the History of Science and Technique, Academy of Sciences of the USSR, on behalf of the Commission of the USSR for UNESCO.

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The International Commission would also like to thank the following scholars for their comments and suggestions on the original manuscript:

The late Professor F. S. Bodenheimer, Corresponding Member of the International Commission, Hebrew University, Jerusalem.

Professor Martin R. P. McGuire, Corresponding Member of the International Commission, The Catholic University of America.

Dr K. M. Panikkar, Member of the International Commission, Co-author of Volume VI of a *History of Mankind: Cultural and Scientific Development*.

The following scholars made their observations available at the request of the National Commission for UNESCO in their own countries:

Professor M. Almagro Bach (Spain), the University of Madrid.

Professor G. R. Castellino (Italy), the University of Rome.

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Dr Hugh Hencken (United States of America), Peabody Museum, Harvard University.

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Professor K. Majewski (Poland), the University of Warsaw.

Professor Tahsin Ozgüz (Turkey), the University of Ankara.

Professor Timoteus Pokora (Czechoslovakia), Oriental Institute of the Academy of Sciences, Prague.

Dr H. H. Roberts (United States of America), Bureau of American Ethnology, Smithsonian Institution, Washington, D.C.

Professor E. Sangmeister (Federal Republic of Germany), the University of Freiburg.

Dr Jirina Sedlakova (Czechoslovakia), Charles University, Prague.

Professor Kiyoski Yabuuchi (Japan), Institute for Humanistic Science, Kyoto University.

Finally, the International Commission would like to thank the scholars whose comments and suggestions were forwarded by the National Commissions for UNESCO in Afghanistan, India and Israel, and by the Ministry of Education of Pakistan.

GUY S. MÉTRAUX,
*Secretary-General.*

*Paris, March* 1962

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# ACKNOWLEDGEMENTS

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Archaeological Museum, Antakia ANTAKIA

Ashmolean Museum, Oxford ASHMOLEAN

British Museum, London BM

Professor J. M. Casal and the French Archaeological Mission CASAL

J. D. Chen, Hong Kong CHEN

Commission of the French Republic for Education, Science and Culture CESC

Commissioners of Public Works in Ireland PWI

Denver Museum of Natural History, Colorado DM

Department of Antiquities of Egypt DAE

Department of Archaeology, Government of India DAI

Direction générale des Antiquités et des Musées, Syria DAMS

Egypt Exploration Society, London EES

Professor Roman Ghirshman GHIRSHMAN

Calouste Gulbenkian Foundation, Lisbon CGF

Heraclion Museum HM

Institute of Archaeology, London IA

Iraq Directorate-General of Antiquities IDA

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Musée de l'Homme, Paris L'HOMME

Musée du Louvre, Paris LOUVRE

National Museum, Athens NM

Ny Carlsberg Glyptotek, Copenhagen CARLSBERG

Oriental Institute, University of Chicago OI

Ostasiatiska Museet, Stockholm OM

Professor André Parrot PARROT

Professor F. Schachermeyr and Verlag W. Kohlhammer, Stuttgart SCHACHERMEYR

C. F. A. Schaeffer, *Ugaritica* I and II SCHAEFFER

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Smithsonian Institution, Freer Gallery of Art, Washington D.C. SMITHSONIAN

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Thames & Hudson, *The Dawn of Civilisation* TH

W. Thesiger, Esq., DSO THESIGER

University Museum, University of Pennsylvania, Philadelphia PENN

Valletta Museum, Malta VALLETTA

Vorderasiatisches Museum, Berlin VM

A. R. Willcox, *Rock Paintings of the Drakensberg* (Parrish) WILLCOX

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# PART ONE

# PREHISTORY

JACQUETTA HAWKES

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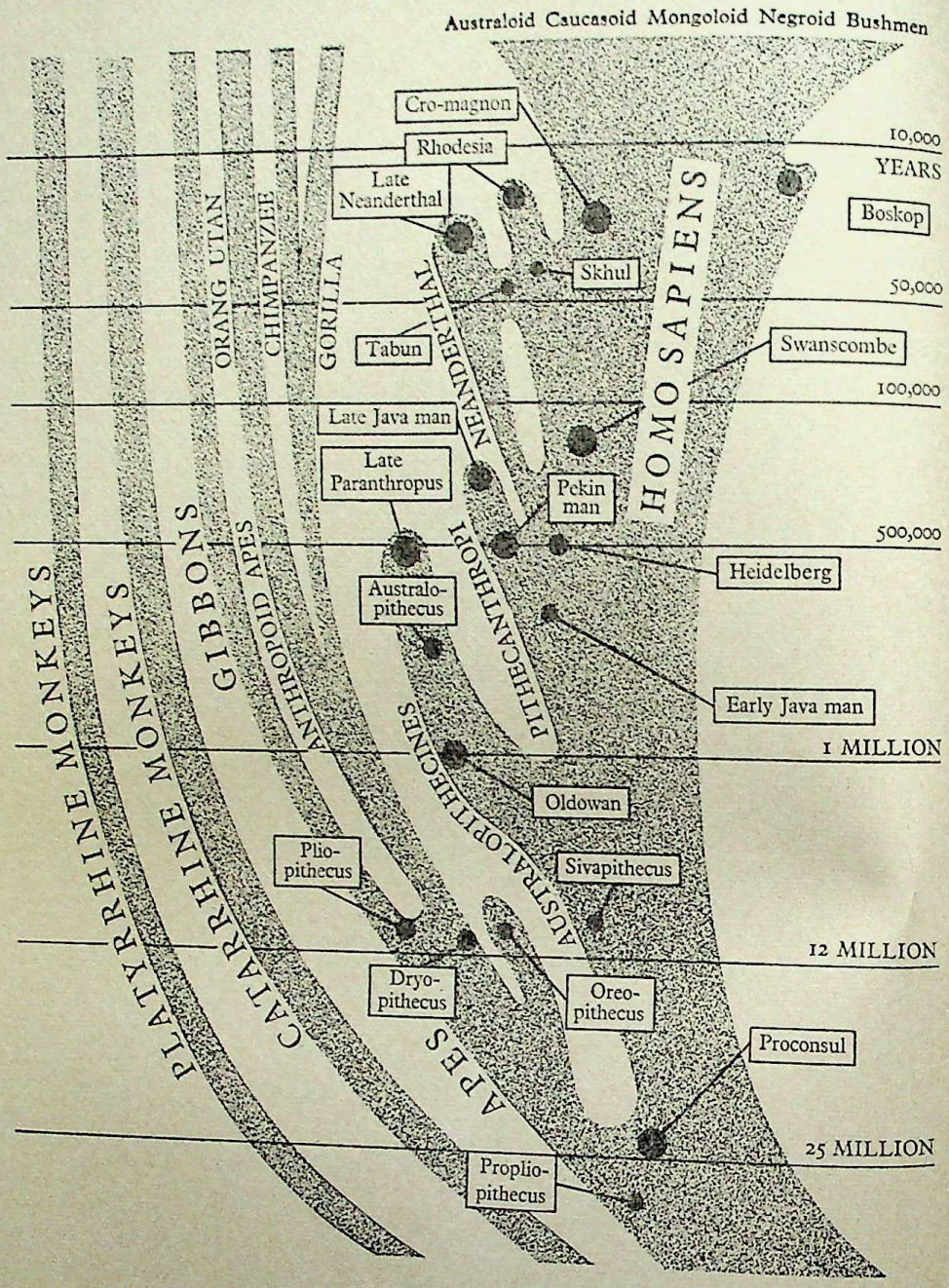


CHART I. The Evolution of Man

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# INTRODUCTION

## I

THE opening of any full history of man must be its Book of Genesis, the story of man's creation. It will be its task to show the emergence, that is to say the gradual creation, of the being whose noble achievements and fearful abominations are to be the subject of the main work. The creature who has now changed the whole face of the habitable earth will be seen coming up out of Africa only a little better equipped than the apes that were his poor cousins. His intelligence and his physical adaptability enabled him to spread throughout the earth, to endure its extremes of heat and cold, to fit himself into earth's forests, plains and hills, but at first in what small numbers and with what little power. The mark which he could make upon a virgin planet, so abounding in other forms of life, was hardly greater than that made by a rabbit running through a hay-field.

It is appropriate, however, that the Book of Genesis, the opening section of our *History of Mankind*, should carry him a little farther forward than this. For very many thousands of years after man was fully man in his physical and mental capacities, his way of life, his culture, remained that of the natural world. He was still a hunter among other hunters, a food gatherer among innumerable other species that picked up their food from the natural products of the earth. It was not until he began the cultivation of plants and the domestication of animals to serve his needs that his life as well as his person became fully human. This part of the History will therefore carry man on to the time less than ten thousand years ago when he began to establish himself as a farmer in certain favoured regions of the Old World. Here is the proper point at which to hand on the story to those who can tell how once man had achieved the agricultural way of life which is still the basis of our existence, his mental powers could flourish and put out the astonishingly rich and various fruits of human civilization.

All later parts of the *History of Mankind* will be introduced by some account of how the content of the particular phase with which they are concerned, the products, practices, thoughts and deeds of its men, are to be related with what went before. These introductions will, in short, describe the inheritance of the new age from the one before. Here, at the beginning of it all, the position is rather different, for in looking back we do not see a stretch of human history leading up to our point of continuation, but instead an immense vista of natural history. A tremendous perspective of landscape and living forms, but not a glimmer of science or culture.

Yet after all the position is not so very different. The inheritance which the Prehistoric Age received from the Prehuman Age was immense and

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powerful. It was the whole body of man and the environment in which he was to live, that basic inheritance which all later ages could take for granted. It is in fact not only the basic inheritance but the most enduring. While civilizations have come and gone we still are born to the identical equipment of body and limbs already shaped a hundred thousand years or more ago—yes, down to our scratching nails and that tendency to long canine teeth. As for our environment, though we have vastly changed its surface and have learnt how to pass its barriers, the shapes formed by oceans and continents, mountain ranges, great rivers, together with the climatic zones of the world still powerfully affect our lives and determine the pattern of our communities great and small.

Whatever view one takes of the means and meaning of evolution, it must now be impossible to doubt that it took place. It is still possible to doubt the orthodox view that the sole agency of change and development in life was natural selection working together with sudden spurts, or mutations, in the organisms; it is possible to believe that these factors only affected the fringes of some process too tremendous for us, its mere products, to comprehend. It may be, too, that the nature of the 'time' in which the process took place is something equally beyond our full comprehension. But the fact that the human stock grew from a creature that walked upright and was ancestral to ourselves and the great apes cannot be denied. Nor that this creature in turn sprang from keen-eyed, deft-footed tarsiers and they again from the little tree shrews that, biding their time, peeped through the shiny leaves at the great dinosaurs and other condemned reptiles of the Cretaceous Age. From there it is no more than a mental stone's throw back by way of the amphibians and fishes to life itself generating between Sun and Earth.

What it will prove most important to remember is that our species did not only inherit from the past its bodily equipment, dominated by its subtly elaborated brain, but also highly charged emotional centres and all the strange ancient furniture of the unconscious mind. Man emerged bringing with him hate, fear and anger, together with love and the joy of life in their simple animal form. He also brought the social heritage of family affection and group loyalty. Today some of us believe (while others do not) that among the most elusive and yet the most precious heirlooms of all were shadowy, deep-seated memories of the experience of the evolving animal line during the vast stretches of its history, memories which enrich and unite modern men by throwing up from the unconscious the images and ideas that inspire our arts and help to make them universally evocative.

Memory of this kind, if it exists, not only unites all men at a very profound level of their being through their common response to its images, but also can serve to make us aware of our old kinship with all life and all being—that blessed and also truthful sense of oneness of which our intellect, if granted too much power, quickly deprives us.

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There can be no question, whatever construction we put upon them, that these mental and emotional inheritances which man received from the prehuman past were to provide a most potent force in the creation of culture. We shall find them giving colour and form to all aspects of human life other than the purely rational and intellectual.

As for the counterpoint to man in history—the natural environment—the problem of inheritance is complicated by the fact that it is less stable. We shall find that by the time, near the beginning of the Pleistocene, when human beings can first be recognized, the geographical structure of the earth as we know it was already roughly established. There were to be many minor changes in sea-level affecting the coastlines, but the main land and sea masses and all the mountain and hill formations were already there. What was unstable was climate, a part of the physical inheritance which affects human life at least as much as the configuration of the land.

All through the Old Stone or Palaeolithic Age, which corresponds in terms of human culture with the Pleistocene of geologists, world climate was violently affected by intermittent phases of great cold when glaciers and ice-sheets spread down from the polar ice-caps and from high mountain ranges. Not only did the ice itself make vast regions virtually uninhabitable, but its presence caused wide shifts in the rain belts and other climatic zones. Such great climatic changes inevitably affected the regions where the Palaeolithic hunters could live: they must also have had some influence on the fate of the different species of men who were then competing for dominance.

The climate continued to fluctuate sharply long after the final triumph over their rivals of men of modern type. During the Late, or Upper, Palaeolithic Age when they were developing what may be called high hunting cultures, there were considerable variations in the intensity of the last glaciation, and afterwards there was the more drastic change that went with the final (from our point of view) retreat of the ice.

Thus for by far the greater part of the time to be covered by the opening section of the History there was no stable environmental inheritance from the past. But by about 5000 BC when the first agricultural communities were already extending in Asia the climate, the distribution of vegetation and all the related factors had settled to approximately their present condition. When true civilization at last began, not only was *Homo sapiens* and the agricultural basis of his existence finally established, but the natural environment which was to form the background of all subsequent history had already assumed the form which we ourselves have inherited.

## II

For many years it was held to be most likely that the earliest human species originated in Asia, probably in some region along the southern slopes of



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the Himalayas, but it is now very generally agreed that the African continent was the birthplace of mankind. The opening of a human history must, therefore, begin by showing how creatures whose human and simian characteristics very nearly balanced lived in Africa, probably late in the Pliocene, and there gave rise to the earliest beings that can be identified as men both from their bodily characters and from their ability roughly to shape stone and wood to suit their purposes. Here we have the dawn of culture, the beginning of that vast and varied creation—material and mental or spiritual—which the mind of man has achieved in its efforts to resist, to master, to understand, to enjoy and to embellish the thoughtless natural world in which he finds himself.

It will appear that it was quite soon after the emergence of man and the beginning of tool-making that some of the human stock moved into eastern Asia and there established a new centre for physical and cultural development. In fact we shall find that from very early times there were to be two great cultural traditions, one cradled in eastern Asia, the other in Africa. Both traditions (with their many different branches) met along an extensive frontier which included India and Europe: as so often in later history this meeting of contrasting traditions proved stimulating to beneficial development and change. Such encounters shake communities of men into a realization that there can be methods of manufacture, ways of thinking and feeling, other than those they have always assumed to be right and inevitable. So, with or without violence, the cultures borrow, blend, and sometimes set off in new directions.

From the latter part of the last Ice Age, let us say after about forty thousand years ago, the old pattern of the opposition and interaction of broadly differing types of humanity gave way to the development, and cultural and racial diversification, of a single human species, that of *Homo sapiens*. From that time we have not been seriously threatened by any species other than our own.

The beginning of this period, the Upper Palaeolithic Age, marks the beginning of the acceleration in the cultural development of mankind that has continued ever since. Further sudden accelerations were to come with the adoption of farming and, so far as technological advance is concerned, with the industrial revolution, but this was the first plunge forward. It seems that the impetus may perhaps have come from the fairly rapid advancement among the Palaeolithic hunters of the possibilities of coherent speech. Whatever opinion is accepted about the origins of language, no one can question the immense importance of the ability to give verbal shape to images and ideas resulting from the experience of life, and so to give them a new coherence and a new permanence. As the invention of granaries made it possible to store corn instead of living from hand to mouth, and as the invention of money made it possible to accumulate the fruits of work and use them for fresh enterprise, so the invention of conceptual speech

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made it possible to save the fruits of experience and use them for the formulation of new thoughts and theories. All alike are a form of banking, a way of making the past serve the future.

The acceleration of progress shows itself most clearly in the development of all kinds of specialized tools to serve the particular purposes of hunters, fishers, fowlers, bone carvers and carpenters. The development of a splendid visual art in Europe suggests that it must also have had powerful imaginative manifestations; probably as well as learning how to paint, carve and engrave these most gifted hunting peoples also achieved altogether new heights of imaginative expression through dancing and poetry.

The overall historical result of such increase in the speed and complexity of cultural change was bound to be that for the first time the evolution of culture far outstripped its diffusion. Until now change had been so immensely slow that traditions could spread over half the globe, providing a universal culture to which we are only beginning to return today. Thus the most characteristic Lower Palaeolithic tool, known as a hand-axe, was made in identical forms in England, Kenya, South Africa and India. But with the Upper Palaeolithic we at once find local cultures differing sharply from one another; it is no longer possible to point to any world-wide cultural product. It seems safe to assume that with this definition of distinct ways of making things and, presumably, of behaving, went an altogether new sense of community. Men must have become aware of belonging to one people and being opposed to others. History suggests that already members of groups not one's own would have been held to be inferior, evil and dangerous people; indeed, hardly fit to be called *Homo sapiens*.

Although it was probably no more true in the late Pleistocene than it is today that cultural groups corresponded at all exactly with racial ones, this was in fact the time when the major races of mankind emerged and were established. Divided from one another in part by the facts of geography and in part by the events of prehistory, perhaps with slightly differing biological inheritances from the remote past, the main racial groups became further differentiated as they responded to the sharply contrasting environments against which they had to struggle. So by twenty thousand years ago there were apparent those differences in appearance and perhaps in temperament, and incipient differences in the traditions of how it was best to live, which still enrich, plague and divide us today.

The end of the Pleistocene was also the age which saw the first human settlement of America. Some of the easternmost Mongolian people crossed into what was to be known as the New World, apparently by way of the Bering Straits, and so pushed slowly southward through the continent.

After the end of the Upper Palaeolithic Age, characterized by a rapid advance in man's technical skill, by the differentiation of races and their spread throughout the world, history must be mainly concerned first with the efforts of the hunting peoples to adapt themselves to the spread of

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forests that in vast regions followed the end of the last glacial phase, and then with the adoption of pastoralism and agriculture which began not very long after the fall of the high hunting cultures. While in many parts of the world, Europe among them, the hunters merely played the passive role of adjusting their habits to forest conditions, in some regions of south-west Asia men were inspired to counter-attack against nature and make the momentous revolution in human history that accompanied the domestication of cattle, pigs, sheep and goats and the cultivation of wheat and barley. From this time, some eight to ten thousand years ago, the historical attention is bound to be focused on the spread of this new economy which was to be the basis of all future civilizations. By 5000 BC there were peasant communities—the first permanently settled communities of history—in Palestine, Iraq and Iran, and soon they were extending eastward as far as India and west and south to Egypt and the eastern Mediterranean. To some territories, such as Europe, the new way of life spread very slowly, the hunting people remaining undisturbed for thousands of years. To many others it never spread at all until modern times. So from this time onward men were to be divided not only by differences of race and tradition, but by violent distinctions of cultural attainment.

This Neolithic or New Stone Age saw an increase in the growth of local cultures, already conspicuous at the end of Palaeolithic times. Hunters must always range over wide territories, and movement had been easy in much of the Old World during late Pleistocene times when open steppe or tundra conditions prevailed. Now there were farming settlements where generation might follow generation in one village or farmstead and where quite small communities were so nearly self-sufficient as to need little contact with the outside world. In some areas, too, dense forests muffled with undergrowth made barriers between one stretch of habitable countryside and the next such as had not existed before. So there developed a patchwork of small cultures, each with its distinctive products. This era of human history was equally unlike the past when the immense slowness of change allowed a uniform culture to prevail from London to Madras, and the future when the immense speed of communications has had the same effect.

It was perhaps the heyday of local colour, for within a few thousand years of the growth of settled peasantries, the favoured lands of the great river valleys of the Tigris and Euphrates, the Nile and the Indus were supporting the development of cities. Villages where cultivators lived together for mutual protection and convenience grew into places where highly skilled and specialized artisans, merchants, administrators, priests and kings gave society an altogether new complexity. The trade and conquest that were a part of this aggrandizement tended to break down the boundaries of the regional cultures and impose instead the larger pattern of commerce and imperialism.

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III

When thinking of the contribution made by this earliest period of human history to those which are to follow, we are inclined, perhaps, to take too much for granted. After all, men might well have lived either in solitary pairs, or in groups in which the individual psyche was as completely fused with its fellows as is the body of a single starling in a wheeling flock; they might regularly have made their homes in underground tunnels or in the tree-tops and have concentrated all effort on howling to the moon. It is, in fact, quite astonishing how quickly, once cultural development was under way, men began to adopt the general habits that they still follow today. We are right to marvel at the enormous variety of human life, yet we should also remember these essential conformities. Early in our history it became usual to inhabit houses built on the ground, to wear ornaments and some clothes, to cook food, to live in family groups with wider social allegiances that might lead to warfare, to work and to play and to give all remaining social energy to religion and the arts.

Thus in addition to the basic contributions of the bodily and mental equipment of man, and his knowledge of how to control animals and plants to make them support a stable society, this age before civilization handed on many traits, of both material and mental culture, to the earliest civilizations. Many of them are with us still, forming some of the universal assumptions of humanity.

In the realm of material culture men had long mastered the mechanics of fire-making, the spear-thrower and bow, and had already gone far with the crafts of weaving and the making of ceramics, with carpentry, masonry and the design of tools for cutting, piercing, hammering and smoothing; also (less happily) with weapons for cutting, piercing and hammering.

In the arts it is astonishing to realize that in the very first known manifestation of the artistic impulse in man, nearly all the existing forms of visual art were already practised. The Palaeolithic artists of western Europe understood outline drawing, engraving, polychrome painting, modelling and carving both in relief and in the round. As far as we can judge from what was written down later, the verbal arts must also have early assumed a fair variety of forms. There were probably both lyric and epic poetry, prose narrative, and partly legendary ancestral history. Music, with its technical and theoretical difficulties, may have lagged behind, but dancing, the most social of the arts, was certainly used as a means of expression by the close-knit, emotional and intuitive communities of prehistoric times.

In any primitive society it is impossible to consider the arts apart from religion, or religion apart from social morality. Man's sharpening self-consciousness gave him a sense of isolation from the rest of life, and almost all his activities other than those necessary to keep him alive were directed

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to establishing a harmonious, satisfying and effective relationship with the external world. Perhaps no contribution made by prehistoric man to his successors is more important than the body of magico-religious attitudes, beliefs and customs that grew up as a part of this mental traffic with the universe.

It is a process of immense subtlety, this traffic, and one still as far beyond our full comprehension as the mystery of existence itself. There is no doubt, however, that man's religious outlook always in large part reflected what he found within himself. It was a kind of mirror image of his own soul. Thus when self-consciousness gave at least some awareness of an entity feeling, thinking, willing, acting, man conceived the idea of a soul responsible for these functions; then, looking outwards, he saw comparable souls or spirits present in all things, animate and inanimate, and possessing a terrible power over man himself. There is no doubt either that he projected emotionally charged desires, such as the desire for fertility in animals, crops and his own family, into personified spirits—in this instance into the fertility goddess or great mother worshipped from Palaeolithic times until today. These reflections of the inner man into the outer world were naturally exalted and refined as humanity itself was exalted and refined. Thus the simpler forms of animism in which things and places are imbued with spirits satisfied minds still almost merged in a tribal consciousness, while the concept of high gods went with a heightening of individuality in man. Similarly in the more primitive stage morality is related to religious practice mainly in so far as the individual, by provoking the spirits, may bring harm to the community.

Even these several suggestions concerning the religious impulse in early man are far too simple, for many other factors are involved. Thus we have to remember that beyond conscious desires and conscious ideas concerning the existence of the soul, man carried unknowingly the impulses of his unconscious mind and these too were projected into the outer world of spirits and divinities. Then, at the opposite extreme from his unconscious mind, man's young, untried intellect made valiant efforts to order and rationalize all his imaginative projections and so devised stories concerning the origin of spirits, gods and men and their relationships one with another that became a part of the body of belief. Finally, we do not know what intuitions of higher levels of being actually present in our universe even the simplest of men may not find within himself. In short, the religious inheritance of the ancient civilizations from the prehistoric past was of a complexity beyond any definition. That it was of compelling importance is well symbolized by the fact that from the first temples dominated the architecture of the cities as the priests and kings dominated their society.

Belief in the existence of a spirit world affecting the human was bound to lead to attempts to establish intermediaries. Even in primitive societies, including those of the Palaeolithic hunters, we find medicine men, shamans,

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seers and artists who in one way or another can interpret the ways of the spirits to men and the wishes of men to the spirits. These specially gifted men were probably the first privileged individuals in human communities, and are undoubtedly the forerunners of the priests and divine kings who came to power with urban civilization. Clearly, then, these figures were originally raised up out of the hearts and minds of the peoples that supported them. They were a part of organic social growth. This is a fact which must discredit the politically inspired view that the priests and kings of the ancient civilizations contrived in some way to foist themselves as economic parasites upon a helpless population and to exploit their simplicity with conscious cunning. Whatever they later became, the men of holy or magic powers which the Prehistoric Age passed on to civilization were of the people and for the people.

It is evident that by the fourth millennium when what had been peasant settlements were beginning to show the graces, complexities and evils of cities, many trends in the future history of mankind had already been determined. Historically it was already certain that the first centres of civilization would lie in western Asia and round the eastern Mediterranean. It was already likely that lands lying near these centres would fairly rapidly acquire civilization, others more distant would acquire it gradually, while others again, either geographically isolated or with hostile climates, would remain unaffected natural 'reserves' where the old hunting life would survive for thousands of years.

It was already decided that civilization should rest on domesticated animals and plants, and the main breeds of these animals and plants were established as a living inheritance. Very many of the crafts that were to keep men busy until the industrial revolution had already made progress, and all the fine arts were in existence. It was already determined that man was to be a social being and a religious being, and that the first great ones of civilized society would receive their authority as intermediaries between man and unseen powers present in the external world. It was also certain that man would carry indefinitely into the future an unconscious mind whose contents would do much to give form and colour to his culture, and in particular to his imaginative creations in whatever field.

Anyone who today looks back at the history of his species may well feel that time has set a vast gulf between the cities of Iraq and Egypt and New York, London and Moscow, yet even so he cannot fail to see what tremendous achievements lay between their foundation and those days of primeval savagery when men went as hunters armed with a few rough weapons in lieu of horns and teeth. The enormous longueurs of prehistory may make our minds yawn, yet momentous, irreversible events took place during those uncalendared ages. They did much to determine the pattern of the ancient civilizations, and they affect us still.

JACQUETTA HAWKES

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SECTION ONE

# THE PALAEOLITHIC AND MESOLITHIC

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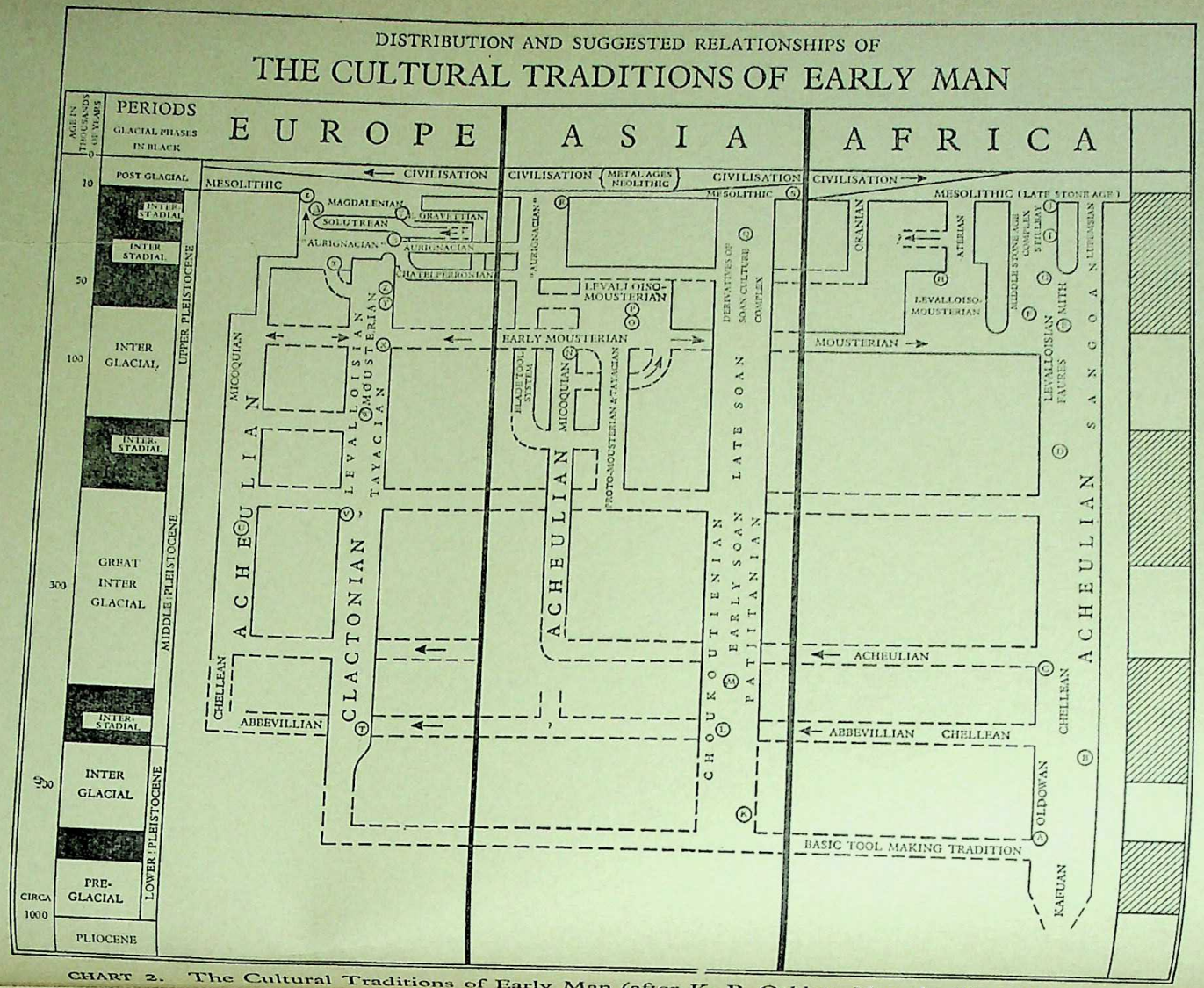


CHART 2. The Cultural Traditions of Early Man (after K. P. Oakley, *Man the Tool-Maker*).

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CHAPTER I

# THE NATURAL STAGE

OUR species, *Homo sapiens*, emerged into full humanity during the Pleistocene Age, the last major period of geological time. It is no mere egotistical prejudice which makes us, through the mouths of our geologists, proclaim this age as being an abnormal one. To begin with it is exceptionally short, less than a million years compared with the tens of millions of earlier ages. This may be due to the fact that it is so close to us in time and so well recorded geologically that we are looking at it out of perspective; nevertheless, the geographical, climatic and biological changes do appear to be sufficiently great to justify its recognition as a distinct period.

We are on safer ground in saying that it is unusual in the large extent of land surface exposed above the oceans, in the size of its great upland regions and the height of its mountain ranges. In this respect, in which it appears merely as the climax of the whole Cenozoic, or Recent, geological era, it is an age of unusual geographical interest and variety, a time of great grandeur and contrast of scenery. For several hundred million years before the Cenozoic era the continental plains were normally broken only by low, rounded hills, and contrasts in climate, in vegetation and animal life were less numerous and sudden.

Above all the Pleistocene is abnormal in its violent and extensive glaciations. Indeed, it is as a glacial epoch that it has been recognized as a period of its own to be distinguished from the Pliocene and other Cenozoic periods. At the height of the greatest of the glacial phases very nearly one-third of the land surface of the earth was under ice sheets or glaciers. There had been no conditions anywhere approaching this for the previous two hundred million years; nothing like it, that is to say, since Permian times when our planet did pass through another glacial phase, though one probably far less intense and widespread in its effects.

We are still living under the exceptional conditions of the Pleistocene period. Although it is usual to separate the ten thousand or so years that have passed since the last retreat of the ice as the Holocene, or Wholly Recent, period, our present times can equally well be seen as still belonging to an age of mountain building and glaciation. Not only are we living among the highlands uplifted during the Pleistocene and earlier periods of the Cenozoic era, but we are living in times of considerable disturbance in the earth's crust. The storm that built the Alps and Himalayas, the Rocky Mountains and the Andes is dying down, certainly, but the earthquakes

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and volcanic eruptions which yearly destroy human life and property are a part of its weakening convulsions.

As for glaciation, although only about one-tenth of the land surface is now ice-covered compared with a third during the periods of its greatest extent, it is exceptional for the earth to carry any ice-caps whatever. Taking the long view of the geologists one can say that normally the poles of our planet have been free of permanent ice, with temperate conditions extending far into the Arctic Circle. Even during the Pleistocene period certain of the inter-glacial spells were warmer than the present; and as these spells lasted up to a quarter of a million years, it is impossible to judge whether the time of periodic freezing is over or whether the whole of human civilization has happened to fall within the early millennia of an inter-glacial phase similar to those of the Pleistocene.

Thus although we may have been well justified in distinguishing the Pleistocene as a full geological period, there is no doubt that in giving the same recognition to the Holocene our geologists were expressing our human bias. If we had not felt that the time of human ascendency demanded an age of its own, the last ten thousand years would not have been detached from the million preceding them.

In order to understand the physical world mankind was to inherit it is necessary to look back over the whole seventy million years of the Cenozoic. This, the era of recent life, not only, as its name indicates, saw the evolution of most of the animal species of the present day including man himself, but also the modelling of the dominant features of the continents which were to have so important an influence on human history. The events of the Cenozoic era shaped the modern world.

The end of the previous era, the Cretaceous Age when the great reptiles seemed destined to remain in the ascendency, had been a time of mountain building when the Rockies and the Andes were first folded, but they were eroded away during the Eocene and Oligocene Ages which cover the first forty million years of the Cenozoic. Their re-elevation towards their present grand and craggy heights occupied the second half of the Cenozoic, culminating in the Pleistocene Age itself. The uplift of these great American ranges was accompanied by widespread volcanic activity which was at its most intense during the Miocene Age.

The history of the Alps and Himalayas, that colossal spine of Europe and Asia, is a little different and even more dramatic. During the previous era the zone which now supports the loftiest peaks in the world (and probably the loftiest peaks there have ever been on earth) was a long narrow trough filled by the Sea of Tethys. As early as the Cretaceous Age two or three folds along the line of this basin made a small beginning of the Alps, but the first great thrust did not come until Eocene times. The Tethys basin persisted until the Oligocene Age when violent pressure from the south made great folds buckle up into the air along the line of the ancient northern edge

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of Tethys. This paroxysm was repeated in the last ages of the Cenozoic, the Pliocene and Pleistocene, and the once vast ocean of Tethys shrank to form the Mediterranean as we know it.

While the geographical setting against which human history was to be enacted was taking shape during the successive ages of the Cenozoic, so too were the bodily forms and habits of the animals man was to know, including all those species which were to be of such immense importance to him as his domestic slaves. The disappearance of the great reptiles at the end of the previous era and the rise of the mammals in this one has not been fully explained; geological changes seem hardly enough to account for so tremendous a revolution in the pattern of life. Certainly, however, it happened; in the earlier half of the Cenozoic the mammals achieved great variety and strength. Many of them, notably the elephants, titanotheres and rhinoceroses had almost as great a physical exuberance as the reptiles before them, carrying strange excesses of tusk, fang and horn. One of the rhinoceroses attained a length of twenty-five feet and stood eighteen feet at the shoulder, the largest warm-blooded creature ever to have imposed its bulk upon the earth. This monster was still flourishing in the Miocene Age, the period when, as we shall see, the family of the primates, from which man was to emerge, began the most vigorous phase of its evolution.

One very significant trend marks the whole course of evolution during this so-called Age of the Mammals: the trend towards larger brains. Though much better provided than the huge, witless dinosaurs, the early mammals had much smaller brains in relation to their body size than have most modern species. That is certainly one of the reasons why so many of the groups of animals which shot up to achieve such spectacular bodily forms during this age had vanished or left only a few scattered survivors long before its end. From this point of view man and the primates merely continued a movement generally characteristic of the mammals in Cenozoic times.

Of the animals which were fated to be domesticated by man and therefore to share in his dominance of the modern world, the family of the Bovidae is by far the most important, including as it does cattle, sheep and goats. It also includes the bison, musk-ox and antelopes which were to be of importance to man during the hunting stages of his history. The Bovidae were an Old World group, the earliest known representatives emerging only in the Miocene Age but diversifying very fast during the succeeding Pliocene and attaining approximately their present forms during the Pleistocene period. It was during this last phase that a few of them, notably the bison and musk-ox, made their way from Asia into North America. In contrast with this family, whose lasting significance in human affairs cannot be exaggerated, the horses and camels were both New World groups, appearing as little beasts no more than a foot high early in the Cenozoic era. The modern type of horse had evolved from the original three- and four-toed species of

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*Eohippus* by the beginning of the Pleistocene, but then unaccountably died out in North America at the time of the last glaciation; as it had in the meantime spread into Eurasia (reversing the route of the bovids), the horse was able to complete its migration round the world when reintroduced into its homeland by the Spanish conquerors. The history of the camel was very much the same except that it survived in America rather later, while recent attempts to reintroduce it have been unsuccessful.

As for the dog, the first species to enter the service of man, the foxes, jackals and wolves[1] from which the domestic forms were to be bred, had established their identity by the mid-Cenozoic times.

Most of the species of the modern flora and fauna of our planet had evolved by the end of the Pleistocene period. But although most of the living forms we know were already present in this period, very many ancient species died out during its successive glacial phases, while certain cold-loving animals like the famous woolly rhinoceros and mammoth became extinct after the last retreat of the ice. No doubt many of these failures were caused by the glaciations, some 'old-fashioned' species having become too inflexible to be able to migrate before the advancing ice and make the adaptation necessary for survival. Nevertheless there seems very little doubt that some animals were pushed towards extinction by man himself, for well before the end of Pleistocene times our Palaeolithic forebears had, as we shall see, become formidable hunters whose weapons, traps and organized drives were already far more deadly than the natural armature of the beasts. Evidence for this theory is provided by differences which have been noticed between the Old World and America. In the continents of the Old World where our kind were slowly increasing their skill as hunters during the whole Pleistocene Age, extinctions occur evenly spread throughout its course; in America, on the other hand, we find species disappearing in much larger numbers during and after the last glaciation, the time when man first penetrated the New World. It seems, then, that already by fifty thousand years ago, man was beginning to make a mark in the world out of natural proportion to his still very modest numbers.

Before we can advance to a discussion of the emergence of man and these early phases of his history when he began to make the power of his intelligence felt, it is necessary to consider the climatic background, and particularly that of the Pleistocene period with its violent fluctuations.

While, as has been shown, the flora and fauna give the whole Cenozoic era its unity, the climatic conditions show no such continuity. The era began with some drop in average temperature, but already half-way through its first period, the Eocene, the earth was returning towards the warmth of the previous, Mesozoic, era, though it was never fully recovered. During the later Eocene and the Oligocene times much of Europe and of North America was clothed with sub-tropical forest such as now only flourishes in moist lowlands and low latitudes; palms and alligators, for example, are repre-

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sentative of the conditions at that time in the state of Dakota. Temperate forest dominated by giant redwoods with deciduous trees such as elm and beech could grow as far north as Alaska, Greenland, Spitzbergen and northern Siberia.

Not only was the climate much warmer and milder, but it was far more uniform than it is today; on land surfaces which seldom rose above the gentle, rounded hills, there could be none of the rain-drenched slopes or lee-side deserts created by mountain ranges.

During the Miocene Age a slight cooling was already apparent, with the temperate and sub-tropical belts contracting towards the equator, and this became more pronounced in the Pliocene before culminating in the devastating freezes of the Pleistocene Age. We have seen that these later phases of the Cenozoic were marked by titanic upheavals of the earth's crust, and there seems no question that the newly formed mountains contributed to the development of glacial conditions. Comparable upheavals preceded the Permian glaciation of two hundred million years before. Glaciers forming at high altitudes, and fed by the increased precipitation encouraged by mountain ranges would flow downwards to form piedmont glaciers on the slopes, which would in turn spread and compact into extensive ice-sheets, often growing thick enough to coalesce with the mountain ice-sheets on the summits and so bury entire ranges. Once this ice-building process has begun, it gains an impetus of its own: thick ice drops the mean temperature and through adding to land height further increases the snowfall necessary to nourish the glaciers; furthermore, the surface of the ice-sheets throws back far more of the sun's heat than does a land surface, thus losing it to the earth. It has been calculated that while ice-free country loses no more than 20 per cent of solar radiation in this way, an ice-sheet will reflect as much as 80 per cent back into space.

Nevertheless, the folding of the Alps, Himalayas, Rockies and other great mountain masses cannot alone account for the Pleistocene glaciations. This is sufficiently proved by their intermittence. The irregularities in the rate of mountain building do not correspond in any way with the warm intervals which divided the period into several distinct glacial periods. It would seem, too, that the rate of fluctuation is far too rapid to be caused by earth movement. Many different theories have been advanced and still find support, but there is now a fairly wide acceptance of the view that the second main factor causing the glaciations was reductions in the amount of solar radiation reaching the earth's surface.

There is no evidence other than the glaciers for a decline in the amount of solar heat reaching the earth at this time; but as minor fluctuations have been recorded in recent times, it is quite possible that the Pleistocene may have been subjected to major ones. Thus in all probability the spells of intense cold which played so great a part during the time of man's emergence and first steps towards culture were due to a combination of uplifts in the earth's

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crust with temporary (and unexplained) weakening in the heat of the sun's rays at the earth's surface.[2]

Whether or not this dual explanation of the Pleistocene glaciations is the correct one, they played so important a part in human development throughout the world that it is absolutely necessary to look at them in some detail, studying not only the glaciated areas but also the regions beyond them where the climatic changes that went with variations in temperature were as significant if less spectacular. It seems legitimate to begin with the European region as this is where research began and where knowledge is still very much greater than it is in Asia. In America, where research is rapidly overtaking the European start, the facts are of far less importance to us as man himself arrived on the scene at so late a date. Africa is of the utmost interest but, as it was hardly affected by actual glaciation, its turn must come later.

The exact point in the geological record at which to open the Pleistocene period has been disputed. Here it is assumed to begin with the first indications of glaciation and by the appearance of the modern horse (*Equus*), the elephants, camels and men. As for its subdivision, the Lower Pleistocene is held to last until the end of the first inter-glacial, the Middle until the end of the third glaciation, while the Upper Pleistocene covers the last inter-glacial and glacial phases.

The recognition that the drop in temperature of Pleistocene times was not continuous but divided into several glaciations separated by periods of warmer climate was first made in Europe. There four cold phases were detected which, under the Alpine titles of Gunz, Mindel, Riss and Würm, have become a classic system providing a basis of comparison for the rest of the world. The third, Riss, glaciation was probably the most extensive of all, and certainly greater than the last. The Würm glaciation, however, had four distinct maxima with slightly warmer conditions intervening. In many regions, as will appear, evidence for the earliest, Gunz, glaciation is exiguous or still lacking, but in general there is no doubt that the fourfold glaciation was a world-wide phenomenon affecting both northern and southern hemispheres and causing a shift in the rain belts that brought corresponding wet phases to lower latitudes. Thus wherever they were living the men who were building up their Palaeolithic cultures during the Pleistocene Age were affected by this periodic freezing of their planet, often being forced into slow migrations and sometimes finding wide areas habitable which under warmer conditions would be dry or desert.

In every glaciation the pattern of the ice formation was much the same though various in extent. In Europe the main ice-sheet started in the Scandinavian mountains and spread asymmetrically, with a much greater reach to the east where the southern edge reached 48° N, and farther north met the Siberian ice-sheet; on the west it pushed some two hundred miles across the North Sea bed (then dry or with shallow waters) before converging with the British glaciers. It is possible that this blocking of the North Sea

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diverted the Rhine to the west where it formed the valley which has since become the Straits of Dover.

Owing to its asymmetrical growth, the centre and thickest part of the Scandinavian ice-sheet crept eastward from the mountain crests until it stood over the region of the present Gulf of Bothnia. At this point it accumulated to the thickness of ten thousand feet, while at its greatest extent it covered well over two million square miles. This was only one ice-sheet out of many; it is not difficult to see how the locking up of so vast a bulk of water would reduce the volume of the oceans throughout the world, even while in some areas the tremendous weight of ice temporarily depressed the land surfaces on which it rested.

To the south of this ice-sheet with its vast almost unbroken stretches of dazzling white the other highlands of Europe generated their own glaciers which spread out more or less widely from their summits; thus the Pyrenees, Apennines and Carpathians carried considerable glaciers, while the Alps, where both height and precipitation were greater, came near to being cloaked by a true mountain ice-sheet. This Alpine ice covered eleven thousand square miles and attained the astonishing thickness of fifteen thousand feet. As for Britain, it formed a smaller version of Scandinavia with glaciers centred on the mountainous areas of Scotland, northern England, Wales and Ireland. During the later glaciations the British ice-sheet met the Scandinavian roughly along the eastern coasts of the island from the Orkneys to East Anglia; during the Gunz and Mindel glaciations, however, the Scandinavian ice-sheet had greater thrusting power and invaded eastern, and even central, England.

In northern Germany and other parts of central Europe glaciations corresponding to the last three of the Alpine system have been identified (and named the Elster, Saale and Warthe); there is little doubt that an earlier (pre-Elster) cold period must have existed there, but proof of it is still insufficient. The situation is very much the same in European Russia, with three glacial phases recognized and a more ancient one inferred.

Like northern Europe, northern Asia supported vast ice-sheets; one, extending from the Urals to the present islands of Novaya and Severnaya Zembla and down to the Byrranga mountains of the Taimyr Peninsula and the Putoranas, at its greatest (probably during the third glacial period) covered as much as 1,600,000 square miles. However, because the snow precipitation was less, it was very much thinner than the Scandinavian ice-sheet; it never seems to have reached more than 2,300 feet, a thickness which left its mountain ranges partially uncovered. Other mountainous regions of Siberia, the Central Siberian Plateau, the Baikal and Altai Mountains, had their own glacial centres, and the mountains of north-eastern Siberia nourished a complex system of ice-cap, piedmont and valley glaciers.

In general, although the wastes of Siberia have hardly encouraged modern man to devote much time to the study of their glacial history, there seems no

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reason to doubt that the sequence of events was much the same as in northern Europe, although considerable difference in precipitation may have caused regional divergencies. It seems certain, however, that there as farther west the last (Würm) glaciation was less severe and extensive than the third.

On the more southern half of the Asiatic continent information is sometimes even scantier. Indeed here we have one of the few patches of the earth's crust not yet fully penetrated by *Homo sapiens*; there are ranges in its vast highland core which have hardly been explored, much less geologically studied. The exceptional height and mass of its mountains naturally caused the formation of glaciers in much lower latitudes than would otherwise have been affected. In the Caucasus, where at present only two cold phases have been distinguished, glaciers stretched unbroken for four hundred miles. In the main mountain mass where the three mighty prongs of the Himalayas, the K'unlun Shan and the T'ien Shan mountains unite in the Pamirs and then extend westward as the Hindu Kush, from three to four glaciations are now recognized. In the Pamirs the glaciations were intense, though limited to valley and piedmont glaciers with no true mountain ice-sheet; in the Himalayas four glaciations have been established, but as the last two probably both correspond with the Würm, the earliest of the Alpine sequence is either absent or unrecognized. In Kashmir and the Punjab, where careful studies have been made, three Pleistocene phases can be distinguished, of which the older and middle may be identified with the first and second glacials and inter-glacials in the Himalayas and the latest with the third and fourth.

If this patchwork account of the Old World is fitted together, it will be seen that in each of the Pleistocene glaciations, ice-sheets covered great parts of the northern territories of Europe and Asia down to about latitude 50°–60° though with considerable breaks; farther south the mountain ranges and plateaux which emboss the continents from Switzerland to China formed their own icy islands, large or small, where precipitation was sometimes enough to build thick ice-sheets which buried the mountain that gave them birth, sometimes only sufficient to fill the valleys and cover the slopes with glaciers. We can now turn to North America to find very much the same glacial events, although there they could have no effect on human history until towards their end.

Just as in Europe a vast ice-sheet building up from the Scandinavian mountains spread until it coalesced with the smaller one born of the British uplands, so in North America an eastern ice-sheet (the Laurentide) originating in the mountains of Baffin and Ellesmere Islands, coastal Labrador and east Quebec thrust westward until it met a smaller one (the Cordilleran) formed by precipitation on the western ranges. At its largest the Laurentide sheet covered more than four and three-quarter million square miles, probably extending far enough eastward to join with the Greenland ice.

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Along its western edge where it met its neighbour along the eastern side of the Rockies and jammed the valley glaciers, ice must have piled into huge and probably unstable masses. The Cordilleran ice-sheet was itself at its most extensive and thick in the region of British Columbia.

The fourfold division of Ice Ages has now been recognized in North America as in Europe; they have been named the Nebraskan, Kansan, Illinoian and Wisconsin, and seem to correspond quite closely with the Alpine system. Like the Würm glaciation the Wisconsin has been subdivided, the Iowan marking its climax and the Tazewell, Cary and Mankato (or Valders) representing minor readvances of the ice. From Cary times the retreat of the ice towards its present limits was fairly rapid. As in Europe, the second interglacial was the longest and the third the shortest (about one hundred and twenty thousand years); in none of them was the climate very much warmer than at present. Alaska was glaciated only in its mountain regions so that the coast of the Bering Sea remained passable during the final glaciation, and soon after the Iowan climax a corridor opened along the east side of the Rockies on the former line of the earlier junction of the Laurentide and Cordilleran ice-sheets. Thus a route was open from the easy line of access across the Bering Straits from Siberia; the straits themselves, which even today are no more than fifty miles wide and very shallow, would disappear with an increase in land level relative to the sea of only one hundred and fifty feet. Such a shift would link Alaska with Siberia by a broad plain offering grazing as good as the long grass of the present Alaskan Plain. That animals such as the mammoth, bison and antelope entered America in later Pleistocene times by a land-bridge of this kind is certain.

While in the northern hemisphere the continents were weighted down by many million square miles of ice, in the southern the drops in temperature which we have attributed to the lessening of solar heat must have led to a considerable spread of sea ice, but the glacial history of this ocean hemisphere passed with little trace and is of almost no concern in the development of man. There was a growth of glaciers in the Andes and in the mountains of New Zealand and Australia.

What are of very great significance for this development are the changes of climate which were the counterpart of the Ice Ages in regions of lower latitude not directly affected by glaciation. The existence of the ice-fields caused a shift in the belt of rain-bearing westerlies, the cyclonic storms, of some fifteen degrees towards the south in the northern hemisphere and towards the north in the southern hemisphere. So it was that Africa, the Mediterranean, Asia Minor, central Asia and north China, the south-west of the United States, and southern South America experienced 'pluvial' periods corresponding with the glaciations of higher latitudes. The reality of these shifts in the rain belt is shown mainly in the swelling of rivers, in a rise in existing lake levels and the filling up of basins now dry, and in the spread of vegetation in many areas now desert. Thus the Caspian and Aral

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Seas were united as were the Black Sea and the Sea of Azov; at some fifteen hundred feet above its present level, the Dead Sea attained a length of two hundred miles. In northern Africa there were lakes in the Fayum and Kharga basins, now dry depressions, and many more and larger lakes in Kenya and Abyssinia. Although there was a marked increase in rainfall in the Sahara and Kalahari deserts and much of the northern part of the Sahara area was able to support vegetation and animal life, desert tracts remained throughout the pluvial periods.[3] In the dry parts of North America there were lakes in basins such as the Bonneville, now completely parched. Australia, too, was to some extent affected by pluvial conditions; Lake Eyre, for example, attained ten times its present size.

Glaciation had one other result which influenced the life of man and his fellow-creatures, and in particular their migrations. The volume of water locked up in glaciers and ice-sheets can lower the ocean levels of the world. It has been calculated that at the height of the greatest glaciation of Pleistocene times the sea-level may have fallen up to four hundred feet, while during the last (Würm) glaciation it fell by well over two hundred. Should the present remaining ice-caps melt (as they show some signs of doing) the oceans might rise by as much as one hundred and sixty-five feet, though it would probably be less.

Such considerable falls in sea-level during the Ice Ages undoubtedly led to the emergence of land-bridges between areas now isolated, enabling men and animals to move freely between them. A bridge linking Alaska with Siberia has already been mentioned; others may have united Japan with the mainland of Siberia, Tasmania and New Guinea with Australia, while Borneo, Java and Sumatra are all likely to have been made one with Malaya by the exposure of the Sunda Shelf. There is archaeological and zoological evidence (p. 72) to suggest that the Celebes and Philippines were linked with the Asiatic mainland not through the Sunda Shelf group, but northward through Formosa. Among many other lesser effects of lowered sea-levels was the emergence of a land-bridge between England and western Europe; this probably took place during each Ice Age, the last severance having occurred some eight thousand years ago.

Looking back to the million years of the Pleistocene, then, we can see the whole surface of our planet swept by a slow climatic pulse. Four times colossal ice-caps with their slow, hardly visible flow crept farther and farther southward, while every considerable mountain mass, some of them still being lifted up to greater heights, supported its own glacial system, and the great rain belts converged towards the Equator, bringing grass and other vegetation in their wake. Four times, after holding their own for thousands of years, the ice-sheets and glaciers began to weaken, and year by year contracted, advancing less far each winter and retreating farther every summer. As they dwindled they left behind them the massive banks and ridges of moraine, the wide spreads of clay and gravel, the spreads of wind-borne loess, the

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smooth, planed faces of striated rock which were their legacy to the lands man was to inherit and to cultivate.

With each of these climatic pulsations we have also to envisage a world-wide migration of plant and animal life. If the period was too short for the evolution of new species, those which had come into being during the earlier Cenozoic era were obliged to shift territories with the ebb and flow of the ice. Such instability of environment made a stern test, and very many of the less adaptable species, failing to meet it, became extinct. One among the mammals, the most adaptable of all, may have been profoundly affected by the forced migrations that made him move to and fro between Europe and Africa, between northern Asia and the south. During the million years of the Pleistocene, man had become possessed of the rudiments of culture,[4] and the challenge of new surroundings and encounters with strangers of his own species with habits and equipment differing from his own may have done much to stimulate his growing mental powers.

This chapter on the natural background of human history must be concluded by an account of the last retreat of the ice and the establishment of the present geographic and climatic conditions which, though they are still in fact slowly fluctuating, appear, to our naturally short-term view, to make the stable background to our modern world. The pattern of tundra and forest, of grassland and rain forest or jungle, the courses of the cyclonic storms and the monsoons, the direction of tides and currents, have played a leading part in influencing the distribution of civilizations, the movements of men, the material basis and some part of the nature of the cultures which, taken all together, form the subject of this history.

The ice, as we have seen, retreated gradually after the climax of the last glaciation, and this retreat was interrupted by several halts or small readvances. In northern Europe where the sequence has been most carefully studied, there were four of these checks, of which the first, the Brandenburgian, was the most considerable. It was followed by the Pomeranian, the Scanian and the Bothnian, each being named after the region where the edge of the ice-sheets stood at the time of the check or advance. There appears to have been a similar sequence of events in North America, but it has not yet been proved whether it synchronized exactly with the European. During the whole period marked by these colder spells our planet was still in the grip of the last Ice Age with a climate which in the present temperate regions varied from sub-arctic to arctic while the rain belt crossed northern Africa and south-west Asia. After the Bothnian advance, however, which can be dated to about 10,000 to 8000 BC, there was a steady rise in average temperatures during the pre-Boreal phase, followed by a more rapid and striking one during the succeeding Boreal and Atlantic climatic periods. In Atlantic times the dry continental climate of the Boreal gave way to moister conditions in Europe with westerlies bringing much greater humidity from the ocean; within it falls the period known as the climatic optimum, lasting from

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about 4000 to 2000 BC, when the average temperature was several degrees warmer than at the present day and the arctic ice-caps seem to have dwindled almost to vanishing point. There is clear evidence for this exceptional rise in temperature in regions as far apart as the Bering and Magellan Straits and New Zealand, although the degree of humidity varied with the position in relation to the rain-bearing ocean winds. Unquestionably then, this brief warm spell, as much as the glaciations themselves, was of world-wide extent and is therefore likely to have been due to an increase in solar radiation.

During Boreal times the present temperate zones began to be more heavily forested, conifers spreading where before there had been birch or the dwarf vegetation of the tundra; with the warm, moist Atlantic conditions the great deciduous forests of oak, elm, lime and other broad-leaved trees attained their greatest density and extent, while the coniferous forests retreated before them towards the north. With the slight worsening of climate which occurred during the later sub-Boreal and sub-Atlantic times (we are still enjoying a sub-Atlantic climate), the deciduous forests had already passed their heyday even before our own species began its onslaught upon them to win arable and pasture land for the new farming economy.

The natural conditions of the Boreal and Atlantic phases are of special concern because it was during these millennia, from 7000 to 2500 BC, that man was exchanging the hunting life that he had shared with so many other mammals for the need to dominate nature that went with his initiation as a farmer. Indeed, well before the close of Atlantic times he had advanced to full civilization in south-west Asia, north-west India and the Nile valley, while farming had spread westward throughout Europe and eastward (intermittently) to northern China. In this context it must be remembered that while 4000–2000 BC has been recognized as the climatic optimum in the temperate zone, this is a biased assessment of a period that brought harsh conditions to some areas in drier latitudes as the rain belt shifted northward. It is probable that while the desiccation of northern Africa and south-west Asia had already gone far enough during Boreal times to begin to drive animal and human populations towards the valleys and moister uplands, this general trend was complicated by local variations. In north Africa, for instance, there is evidence for a temporarily wetter phase particularly affecting the west and south Sahara round about the fourth millennium BC.

During the whole of the glacial retreat there was wide fluctuation in the relative height of land and sea. At first the release of a great volume of water caused the sea-level to rise throughout the world but this was followed, much more locally, by a rising of land surfaces as the earth's crust responded gradually to its release from the weight of ice. These two contrary forces caused fluctuations in levels varying widely from one area to another, even within relatively small regions. They are recorded today in many parts of the world in raised beaches and submerged forests or other drowned land

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surfaces. The series of ups and downs has been most exactly studied in the Baltic where, after the release of an ice-dammed lake corresponding with the Scanian advance, the water rose above the present level to form the Yoldia Sea. Recovery of the land during pre-Boreal and Boreal times resulted in the formation of the Ancylus lake, with Denmark and the southern part of the Scandinavian peninsula united to cut it off from the North Sea. In the Atlantic period further melting and other factors led to another rise in relative sea-levels in the Littorina Sea which can be dated from about 5000–2000 BC. Since then the levels have adjusted themselves gradually to those of the present Baltic.

By the beginning of the Atlantic period all the major climatic and geographical changes resulting from the vast reduction in earth's burden of ice had taken place; there were to be many more small changes, but broadly the amazing variety of scene and condition which man was to exploit on the surface of his planet was already established. The jungle was there for the pygmy, the ice-floes for the Eskimo, and between these two extremes easier conditions offered the possibility of high civilization. We can follow the main pattern as a series of zones encircling the earth on either side of the Equator, although owing to the clustering of the continents in the northern hemisphere and the watery nature of the southern, most attention must be focused on the north. If climate were determined entirely by the sun, these belts would follow one another with steady uniformity, and would correspond more or less exactly on either side of the Equator. Happily, however, we have inherited an earth on which land surfaces are quite unevenly distributed and of uneven height and with its waters and atmosphere stirred by currents both vigorous and various. These powerful agents of irregularity combine to create a physical climate diverging widely from what would have been determined by solar radiation alone. Thus, for example, the warm, mild and moist peninsula of Cornwall is on the same latitude as the near-tundra conditions of northern Newfoundland on the one hand and the Gobi desert on the other.

So cutting across the broad zones there are oceanic and littoral climates, continental and mountain climates. Again, all these variables, with the added one of soil, have a strong influence on vegetation, so that the correspondence between the broad climatic and vegetational zones is very erratic, particularly in those humanly all-important latitudes between the extremes of heat and cold.

Nevertheless, the ancient conception of five great zones has its validity, and it is worth recognizing the Torrid zone round the equatorial girth of our planet (in fact the hottest latitude is 10° N), followed by the pair of Temperate zones lying between the Tropics of Cancer and Capricorn and the Arctic Circles, and the pair of Frigid zones capping the globe beyond the Arctic Circles. If to this solar climatic system we add the factors of the enormous overgrown size and lofty mountain core of the

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Eurasiatic continents and the dominant winds, we shall gain some understanding of the main pattern of climate and vegetation against which human history has been played (Map I).

The wind systems, then, must be examined before the zones themselves are traversed. The essential distinction is between the latitudes dominated by the trade winds and those dominated by the westerlies and the cyclonic storms. The equatorial belt itself is generally calm and windless, the territory of the doldrums, but from 10° to 30° to the north of it the north-east trades blow steadily, while from 0° to 25° to the south the south-east trades take charge. Within these two vast zones, therefore, the east coasts of the continents, particularly if they are bold or mountain-lined, tend to be well watered while the west coasts and even the central areas are dry or desert. This is the explanation of the deserts that run right to the coast in South Africa (the Kalahari) and central Chile, and of the aridity of Western Australia. The most striking exception is in India where a south-west monsoon supervenes to bring abundant moisture to the west coast.

To the north and south of the trades lie the latitudes of the westerlies, where the rule is reversed and west coasts tend to be wet and east ones dry. Indeed, as the westerlies carry the cyclonic storms, they are far wetter than the trades, and such high or mountainous coasts as those of British Columbia, Ireland and southern Chile have some of the highest rainfalls found outside the tropics. The contrast between the wetness of the southern Andes and the desert of the northern makes the clearest possible demonstration of the contrary influence of trades and westerlies.

Having taken account of the main factors other than the sun which control climate we are ready to examine the zones in order, generalizing so far as is permissible about their climates and vegetation and the opportunities these offer to man and beast. Beginning at the centre, we find in the equatorial belt itself a region little disturbed by winds and with practically no seasonal variation, where the power of the sun is absolute. The tropical rain forests grow tall and sombre, for intense heat and heavy rain encourage the growth of gigantic trees whose branches, bound with creepers, fuse into vast platforms of vegetation where monkeys, birds and snakes can flourish in an upper treescape of their own; below in the dim green twilight only insects find ideal conditions. There are no large animals, and the human history of the Congo and Amazon basins, the west coast of central Africa, Sumatra and Borneo is sufficient proof that the rain forests do nothing to encourage man to activity, of either body or mind.

On either side of the equatorial zone, these forests tend to give way to jungle of a less impenetrable kind. The heat is still tropical, but the humidity less; grass and shrubs mingle with the trees and the sunlight is not altogether shut out. Many of the ancient and less adaptable species of animal such as the elephant, hippopotamus and the great apes have managed to survive in small numbers in these regions where competition is not too great. Man has

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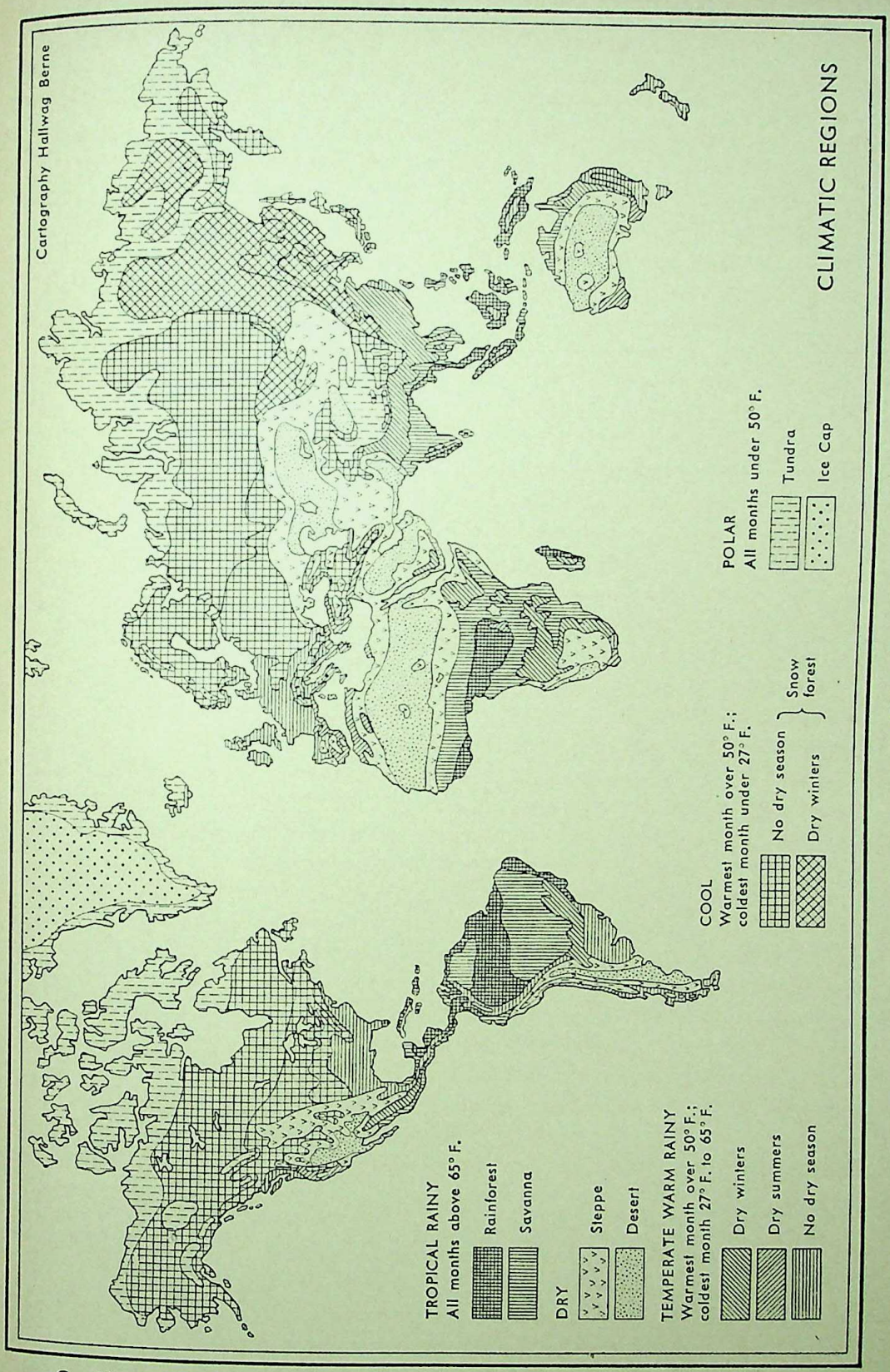


MAP I



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lived among these jungles sometimes in ease but seldom with much cultural distinction.

In the succeeding zones park conditions prevail in highland regions and savannah on the plains. In the southern zone conditions of this type occur in parts of Brazil, Uruguay and Paraguay, then in Angola, the Rhodesias and Bechuanaland. One might justifiably include in this category the partly grass-covered alluvial plains of eastern Australia. In the northern zone they occupy much of Venezuela and Guiana and are found at their most characteristic in Africa in the vast belt that crosses the Sudan and Abyssinia. This kind of country, at least before man invented the sporting rifle, often supported mammalian life at its finest and most spectacular.

To the north of this open and fairly dry region, rainfall dwindles to almost nothing in the tropical deserts which stretch across Africa and Arabia from the Atlantic to the Red Sea; in the southern hemisphere tropical desert is prevalent only in central Australia, in the Kalahari area of South Africa and in a strip of the South American coast. Nearly continuous with the belt of African and Arabian desert, but mountainous and in colder latitudes to the north, are the almost equally immense though more broken continental deserts of central Asia where the winter climate is intensely cold. A comparable desert covers much of New Mexico and Arizona and parts of California, Colorado and Utah in the south-west of the United States. These continental deserts owe their aridity not to lying in latitudes of great heat but to their distance from rain-bearing ocean winds, and often to lying in the lee of mountain ranges which catch the precipitation and form these desert 'rain shadows'. While the tropical deserts are normally quite uninhabitable by man or beast except where there are underground water supplies, the continental deserts often carry enough scrub and tough grasses to be able to nourish sparse flocks and herds.

North of the deserts the pattern for a time becomes more broken. A narrow belt of what is now poor grassland follows the southern shore of the Mediterranean, through Palestine (with a westward extension back into Asia Minor), Syria and Mesopotamia to run along the Asiatic littoral north of the Red Sea, and so on to widen out with the Indus valley. The beasts which in a natural state grazed this poor pasture verging on the desert were the wild ass and camel. On the many limestone uplands adjoining, however, such as the Iranian plateau, where more park-like conditions prevail, wild sheep were native. Here, too, grew the wild grasses ancestral to our cultivated cereals. This strip of grassland and limestone park country is of extraordinary importance in the history of man.

Much of this territory can be accepted as sub-tropical, as is also the otherwise very different neighbouring region of the Mediterranean basin. Although they have nearly all been cleared by the many great peoples that have flourished round this most famous inland sea, evergreen forests once covered much of the area with its many peninsulas and islands. Trees such

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as the ilex, bay and olive with their deep roots and leaves designed to reduce evaporation are able to withstand the hot and dry summers which disturb an otherwise moderate climate. These Mediterranean lands (which have a near counterpart in a small region round the Cape in South Africa and in California) are ideally suited to man, supporting in abundance the fruit, flowers, oil, nuts and domestic animals—to say nothing of the vines—that bring him most delight.

Moving northward from the sub-tropical to the temperate zone we also enter what since Boreal times has been the course of the westerlies, bearers of cyclonic storms, those spiralling disturbances that travel round the globe bringing violent, changeable weather with rain and veering winds. In the northern hemisphere they sweep over North America from British Columbia to New England, storm across the Atlantic and then onwards right across Europe and Asia from Ireland to Japan. In the southern hemisphere their course lies mainly across the oceans, but they cross South America (in the region of the northern Argentine and Uruguay), Tasmania and New Zealand.

The broad pathways of the cyclonic storms support different kinds of vegetation determined mainly by the position in relation to the oceans, by mountain barriers and by soil. In western Europe as in the eastern United States and central Canada, there is a natural covering of deciduous forest, found again in Chile, Tasmania and New Zealand. Farther from coastal moisture and on the light, loose soils inimical to dense forest, there are the natural grasslands such as those of the mid-western prairies in the United States and the great open passage-way of the steppes running from central Europe far eastward through southern Russia as far as the Altai mountains. In between these sharply contrasting realms of grassland and forest there may be intermediate regions of parkland.

The natural condition of this part of the temperate zone has been revolutionized by man. Much of the grassland which was once the home of flocks of wild horse and cattle (in America the bison) is now given over to wheat, while the deciduous forests, where the pig was most at home, have been cleared and devoted to mixed farming, including the herds of domestic cattle whose ancestors were native to the grasslands.

Moving beyond these very broken regions in the northern hemisphere we are once again in the latitudes of more uniform climatic zones. First is the great gloomy belt of the coniferous forests occupying the northern part of the temperate zone where pine, spruce and fir cloak so much of Canadian North America and of Eurasia from northern Scandinavia to the Bering Strait. Here, although man ceaselessly attacks the forests for lumber, he has not done much more to change the natural vegetation and animal life, for summers in these latitudes are too short for agriculture except of a very specialized kind.

Beyond the sub-arctic forests even the tough conifers die out before the arctic cold, and we reach the extensive belt of tundra that follows the northern

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coasts of Canada and Eurasia. Here marshy soil which even in the short summer thaws only on the surface, nourishes mosses and, in its more favourable stretches, arctic birch and dwarf willow. Reindeer, caribou, musk-ox and other cold-loving animals that once ranged far to the south beyond the Pleistocene ice-sheets, retreated with the ice and now browse the mosses of these desolate lands.

While the southern hemisphere has no land surfaces to support sub-arctic forests and only a few exiguous patches such as Graham's Land which might qualify as tundra, both poles alike are crowned by ice-caps, which, as we have seen, are the survival of the Pleistocene glaciation and are not a geologically normal feature of our planet. The Arctic supports polar bears, seal, walrus and great quantities of migrant birds rendering human life just possible. The much larger Antarctic, lying so remote from the great continents, was inhabited until recently only by seals and penguins and a few other sea birds; even now its human population is limited to a few observant scientists.

Here then, in rough outline are the principal climatic zones that band our earth from the Equator towards the poles; it is a survey which ignores countless local regional differences that have had a powerful influence on the cultural tone and well-being of human populations. Nevertheless, it gives some idea of the main controls which environment exercised on the development of man, here offering him opportunities, there imposing burdensome handicaps. Environment does not determine cultures or the fortune of peoples; that is a view that can be held only by those whose rigid minds habitually ignore everything that cannot be pinned down by natural laws. One cannot even be sure of the outcome of opportunity and handicap: for example, the inhabitants of tropical jungles seem to have found the necessities of life so abundant and easily won that they made no effort to advance their culture, while on the other hand the energetic enterprise of many hard-pressed mountain peoples is well known.

Without erring towards determinism, however, no one can deny the idea of natural conditions as a limiting factor of high importance. It is not by chance that nearly all the crucial achievements in the history of ancient civilizations took place within the temperate zone of the northern hemisphere. While the growth of art, religion, science and philosophy cannot be absolutely prohibited by an environment as that of, say, lime-hating plants may be, nevertheless there are many settings in which it is never likely to reach its highest development.

## NOTES TO CHAPTER I

1. The origin of the dog domesticated during the Mesolithic has not yet been fully proven. Its ancestry must be traced back among *Canidae* in the narrower sense (genus *canis* s. str.), wolves and jackals. According to Boessneck 'there are the greatest difficulties in defining

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the different forms within this genus and in establishing the connections between the different species. Opinions vary on the extent to which the larger-sized Nordic wolves and jackals proper were related to the dog. The most likely ancestors of the domesticated dog of today are the smaller wolf-like forms of the south, such as the *Canis pallipes* Sykes in particular, which also from the standpoint of animal psychology are best adapted to domestication'. See J. Boessneck, 'Herkunft und Frühgeschichte unserer mitteleuropäischen landwirtschaftlichen Nutztiere', *Züchtungskunde*, Vol. 30, 7 (1958), p. 293.

2. Professor Martinez del Rio considers that it must nevertheless be borne in mind that there is neither proof of, nor general support for, the hypothesis that 'insolation' (= the amount of solar radiation reaction upon the surface, in the broad sense) is the cause of glaciation. See H. Shapley, *Climatic Change: Evidence, Causes and Effects* (Cambridge, Mass., 1953).

3. Professor D. C. Baramki suggests that the existence of deserts during the pluvial periods may be explained by the fact that the 'lift' immediately north of the equatorial belt contributed greatly towards the desiccation which produced the Sahara, Kalahari and Arabian deserts. See F. E. Zeuner, *Dating the Past. An Introduction to Geochronology* (London, 1958), pp. 265–71.

4. 'Culture' is a complex word that has been variously defined. Two anthropologists have suggested that culture is 'the sum total of learned behavior patterns which are, therefore, not the result of biological inheritance' (Hoebel), or that 'culture consists in all transmitted social learning' (Kluckhohn).

   See A. L. Kroeber and C. Kluckhohn, 'Culture: A Critical Review of Concepts and Definitions', Peabody Museum of American Archaeology and Ethnology, Harvard University, *Papers*, XLVII (1952).

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CHAPTER II

# THE EVOLUTION OF MAN

As we follow the history of man, we shall find the centres of interest, the fresh growing points, swinging from continent to continent. Often after a period of such eminence or initiative, the region may lapse into relative unimportance, only to come to the fore again at a later time. There is now not very much doubt that the continent which has the first claim to pre-eminence is Africa.[1] Although it is too soon for final judgement, recently gathered evidence suggests that the earliest hominids emerged there, the earliest tool-making men, and perhaps, though by no means so probably, the earliest representatives of our own species, *Homo sapiens*.

Man, the unique animal with whose subsequent achievements and failures these volumes are concerned, belongs to the order of the Primates, which he shares with the tree shrews, lemurs, tarsiers, monkeys and apes. To follow his emergence, then, we shall be following the main line of Primate evolution from the tree shrew up to the super-family of the Hominoidae, to which man is assigned together with his nearest surviving kin, the anthropoid apes—chimpanzee, gorilla, orang-utan and gibbon. Although in following such an evolutionary line we legitimately illustrate it by surviving examples of its various stages, it has to be remembered that in fact although the modern species—such as the tarsiers, for example—may keep many primitive traits, they too have developed over the vast spans of time involved and may show specialized features not found in their early ancestors. Another factor which makes the tracing of such a direct line through fossil forms extremely difficult is the frequency in evolutionary history with which a genus, family or species may branch off, run parallel with others for a time, and then become extinct. Again and again we shall find uncertainty as to whether a particular fossil primate is on the ancestral line of the modern apes or man or whether it represents one of these unsuccessful offshoots. Primate evolution shows several general trends. One is the modification of the limbs to fit them for tree-climbing, and later, among the hominids, for walking upright on the ground. The others, shown in the all-important development of the skull, are the enlargement of the brain (including an increase in the space devoted to the sense of sight, and a decrease in that for smell); the gradual advancement of the eyes from the side to the front of the head (allowing stereoscopic vision) and their enclosure in bone sockets; the shortening of the snout, and the forward movement of the opening for the passage of the spinal cord and blood vessels into the brain—the *foramen magnum*—from the extreme back of the skull to a more

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central position below it. This last development was made necessary by the assumption of an upright stance and the consequent balancing of the head directly upon the spinal column. A rather surprising fact firmly established only in recent years is that among the early men, or hominids, the evolution of the limbs for walking and standing upright and for free manipulation preceded and outstripped the evolution of the brain and skull. The interplay between the freeing of the hand by the assumption of an upright carriage, the development of acute, stereoscopic vision and the growth of mental capacity presents a vital aspect of primate evolution which will be more fully discussed in Chapter IV.

Our knowledge of these general trends derives from a scatter of fossil finds from many regions of the Old World. These are already considerable in number and rapidly increasing, yet they are still haphazard, greatly affected by the varying intensity of research in different areas—and in many instances extremely fragmentary. Moreover, a complete unity of study can hardly be obtained; there is certain to be some degree of insularity even among palaeontologists. Thus, as is recognized to have been true in the case of *Pithecanthropus* and *Sinanthropus*, the recognition of distinct species and genera is sometimes due as much to differences between the knowledge and opinions of their modern interpreters as to differences between the bodily forms of the ancient primates themselves. Yet in spite of all shortcomings, and in spite of one or two major issues still in dispute, a coherent picture is beginning to emerge (Chart on p. 2).

The earliest known primates were already widespread in the Eocene period, near the dawn of the Cenozoic era. Their fossil remains, which have come to light in North America, France and southern England, relate one branch to the present-day lemurs of Madagascar, and another to the East Indian tarsiers. They were descended from little shrew-like arboreal creatures which were making a livelihood out of insect-hunting when the great reptiles were still dominant on earth.

During the succeeding Oligocene period the emergence of the apes in Africa had already begun with *Parapithecus*, a very small species whose teeth have some points in common with those of the great apes. *Parapithecus* was followed by the gibbon-like *Propliopithecus*, and the evolutionary ground was now prepared for the great expansion and diversification of the apes which was such a remarkable feature of the Miocene period in Africa.

Among the early apes (or perhaps, better, proto-apes) of this time which were either our direct ancestors or had not diverged far from the human stem, was *Proconsul*, a generalized species of monkey-like agility, which could climb and leap among the trees, but which might also run on all fours on the ground and perhaps occasionally raise itself to scamper on its hind legs. In many important respects, specifically in its somewhat lighter build, smaller canines and absence of the 'simian shelf' on the lower jaw, *Proconsul* was more human in appearance than are the modern apes. It was, in fact,

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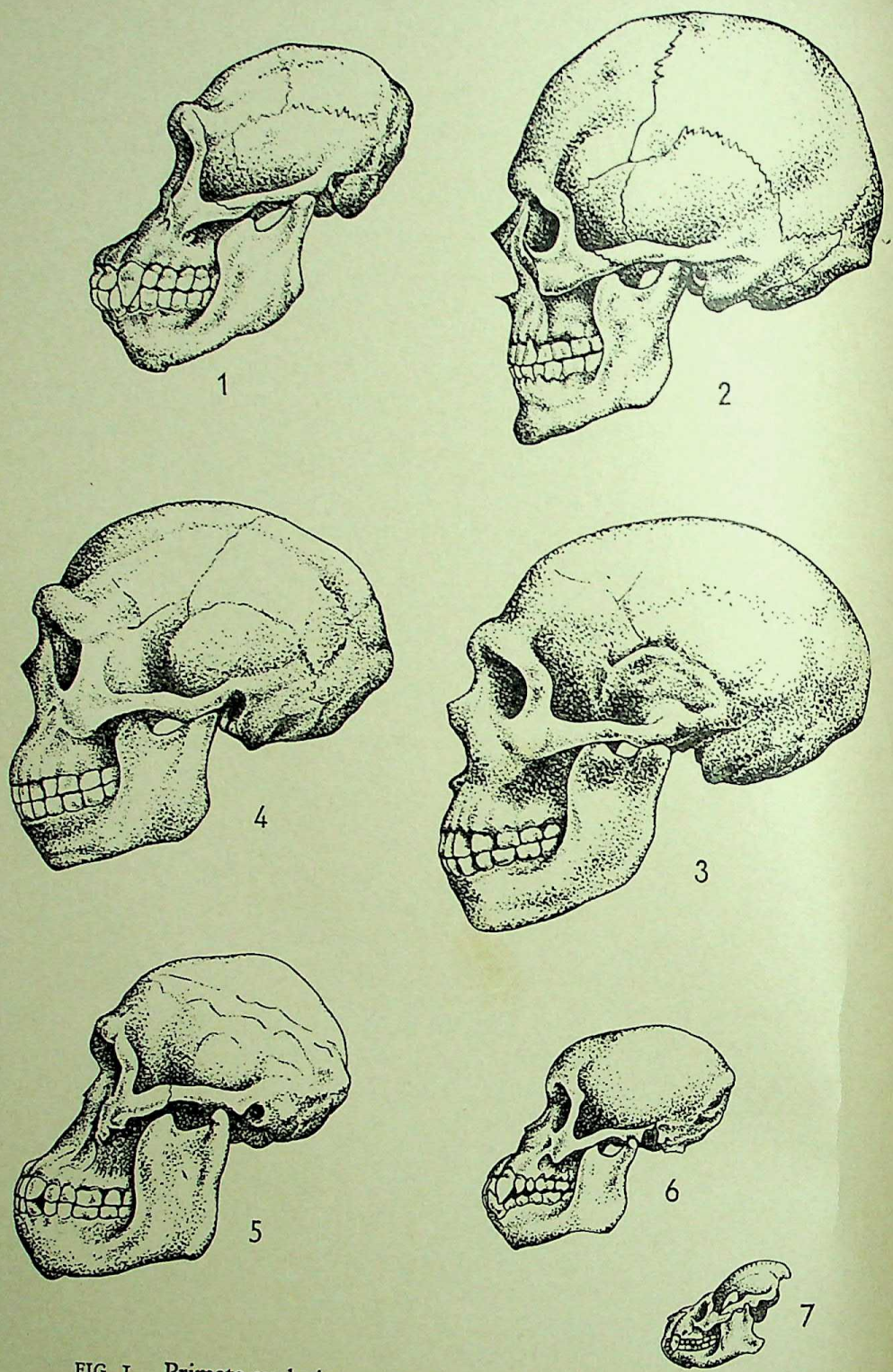


FIG. 1. Primate evolution. 1: Modern chimpanzee; 2: Modern man; 3: Neanderthal man; 4: Peking man; 5: *Australopithecus*; 6: *Proconsul Africanus*; 7: *Adapis parisiensis*, an ancient lemur.

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still so generalized that it could conceivably have been ancestral to both apes and men, although it is more probable that it should be placed near the base of the simian stem. For at that time, some thirty-five million years ago, the family of the Pongidae which was to produce our nearest animal kin, the gibbon, orang-utan, gorilla and chimpanzee, was beginning to diverge from that of the Hominidae. Remaining for the most part tree-dwellers (though the chimpanzee and gorilla have taken to living most of their lives on the ground, they are still forest-bound) the apes developed the long hands and arms, and retained the opposable big toe, adapted to an existence spent swinging and running from branch to branch.

The new primates did not long remain confined to their African cradle-land, but before the end of the Miocene period had spread into other parts of the Old World. One genus, *Dryopithecus*, was widespread in Eurasia, while another, *Pliopithecus*, showing affinities with the gibbons, seems to have been quite common in southern Europe before the close of Miocene times. Although the balance of present evidence suggests that Africa remained the evolutionary centre for the higher apes, the rival claims of southern Asia cannot be ignored. The Siwalik hills of India have yielded quantities of the fossil remains of large primates belonging to numerous genera. Many are species of *Dryopithecus*, and of these some groups, it has been argued, might be ancestral to the Pongidae, while others could be trending in the human direction. One Pliocene species from Siwalik, *Ramapithecus brevirostris* (like so many others, known only from a jaw bone) has been seen as bridging the anatomical gap between the anthropoid apes of this period and the Australopithecines soon to be described.

One of the apes native to southern Europe demands special mention because of the ambitious claims made for it. The Pontian beds of Italy in which this *Oreopithecus* has come to light are assigned to the early Pliocene by all geologists save some of the French who prefer to call them Miocene. The previously scrappy fossils of *Oreopithecus* have now been reinforced by an almost complete specimen, and some authorities see in it a fully evolved hominid, the earliest man known to us and an ancestor of *Homo sapiens*. This claim has been further developed to suggest that the division of the Hominoidae into the Pongidae and Hominidae took place earlier than was thought. Quite apart from the argument supported here, that the true men should be recognized by an ability to make tools rather than by any anatomical definition, other interpretations of the *Oreopithecus* fossils are possible. One is that this Italian genus represents a third branch of the Hominoidae which forked off at the same time as those of the apes and men but died out in early Pliocene times.

For the next crucial step in human evolution we return to Africa, and the Australopithecines (Fig. 2). As their name shows, these beings have been regarded as apes rather than men, but it has long been accepted that they possess a number of features bringing them closer to man than any other ape.



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Now that it begins to appear that they were capable of shaping stone tools, it may be necessary to promote them to a place among the true hominids. The plentiful fossil remains of *Australopithecus* which have been excavated, chiefly from stalagmitic deposits in limestone caves and fissures in the Transvaal and Bechuanaland, all date from the first to the second pluvial periods of the Pleistocene Age and are therefore too late to be ancestral to man. On the other hand they come so near to fulfilling all the scientific

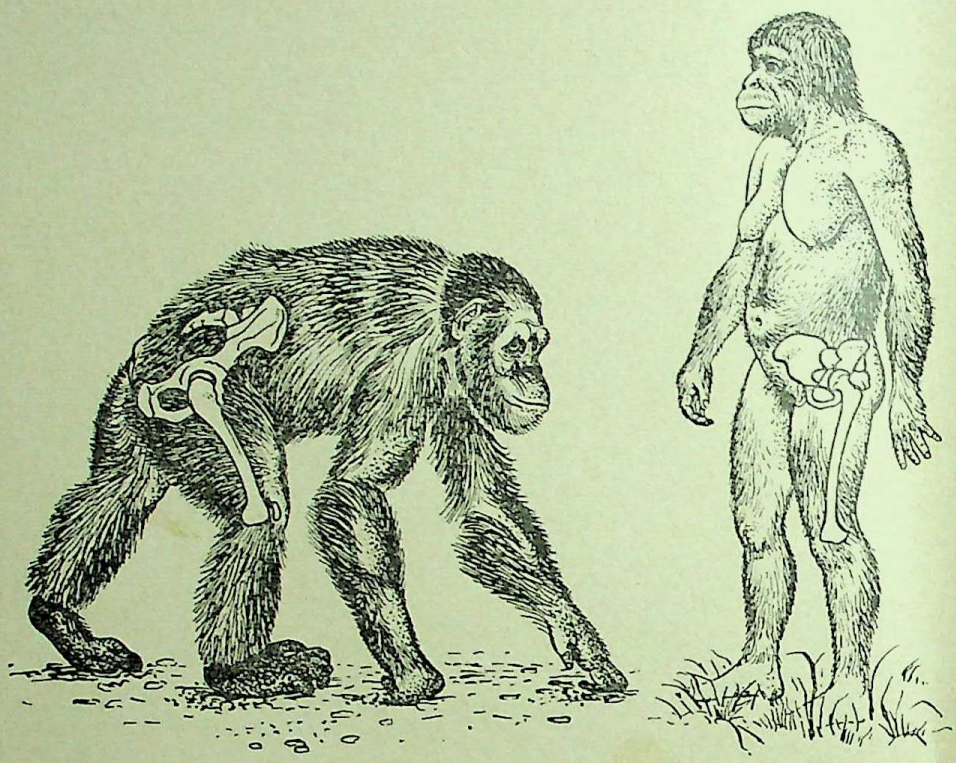

FIG. 2. Chimpanzee and reconstruction of an *Australopithecus* showing modification of pelvic girdle (after Singer *et al.*).

requirements for our Pliocene ancestors that they are generally considered to represent a persistent branch of such an ancestral stock that survived almost unchanged among the dolomite hills of South Africa long after their more progressive cousins had advanced to tool-making and were spreading triumphantly throughout the Old World. In looking at the Australopithecines, then, we are seeing creatures that must closely have resembled our still missing Pliocene forebears.

They were small, rather slightly built beings, about the size of modern pygmies; although their feet were probably more flexible than our own, they seem normally to have walked upright, with the skull balanced above the spine very much in the human fashion. The back-bone, long bones, pelvis, and *foramen magnum* at the base of the skull, all indicate this upright

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carriage. The head borne in so human a manner, however, had a strongly apelike aspect, with low forehead, eyes deepset below prominent brows, flat nose and protruding muzzle. On the other hand the teeth of *Australopithecus*, in their cusps, in the moderate size of the canines and in the parabolic plan on which they are set, are much more human than simian. Furthermore their brains, though only in one instance absolutely larger than those of modern apes, are considerably bigger relative to their body size.

The characteristics described are common to the sub-family, but the known specimens of Australophithecines can be divided into two groups, differing slightly both in age and anatomy. The older type, living during the latter part of the first African pluvial and into the succeeding interpluvial, was, as might be expected, the more human in appearance; the original Taungs (Bechuanaland) example belongs to this group and others have been identified at Makapansgat and Sterkfontein. The more recent type, living during the first interpluvial period and possibly on into the second pluvial, was taller, rather more heavily built (*Australopithecus robustus* or *Paranthropus robustus*) and generally slightly more apelike. The Australopithecines were, in short, trending away from the original ancestral human line in much the same direction as the Pongidae, although their evolution in this direction did not go so far and could not include any of those traits which the apes developed as an adaptation to the arboreal life.

For all the Australopithecines had left the forests and their edges to live in dry, open savannah broken by rocky outcrops. Some appear, also, to have taken to flesh-eating, enjoying a mixed, perhaps omnivorous diet like that of baboons. It may be that they were like the baboons again in hunting in groups. Possibly they were scavengers.

It is commonly agreed that the surest way to distinguish the earliest men from their fellow animals was in the possession of sufficient will-power, foresight and skill for the manufacture of tools. Had these creatures, with their almost equal balance between human and simian characters, taken this first step towards the creation of culture? It begins to look as though the answer may be yes. As we shall see, it is certainly true that equally ancient and related hominids were tool-makers. In the limestone fissures and caves where most of the *Australopithecus* fossils were discovered there were also many other animal remains, including the skulls of baboons broken in a manner which suggested to some observers that they had been clubbed. In none of the early excavations, however, were any stone artifacts or other deliberately shaped tools found in association with *Australopithecus*. Some interpreted this evidence as showing that the little apemen, though incapable of tool-making, used natural sticks and stones as weapons. Others were sceptical of the significance of the baboon skulls, and moreover were inclined to think that the caves and fissures were the dens of carnivores and that the Australopithecines were there not as hunters but as hunted, perhaps dragged to their lairs by sabre-toothed cats. Yet it

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was certain that stone tools were being made at this time (p. 64), and so it had to be assumed that a higher breed of hominid, a tool-maker and therefore deserving the name of man, was living contemporaneously with *Australopithecus*, having passed him by on the evolutionary road.

In 1956–57 the picture was changed by further discoveries made at Sterkfontein. In a brecciated layer in the cave, overlying the abundant *Australopithecus* fossils but itself containing some probably Australopithecine teeth, were considerable numbers of pebble tools of the Oldowan type (p. 66). The obvious way to interpret this discovery is to accept the fact that in spite of his small brain *Australopithecus* was indeed capable of making tools, and that in this part of South Africa, at least, he was the possessor of the Oldowan pebble culture. It remains puzzling that no implements were found in the main fossil bed at Sterkfontein or at the other Australopithecine sites. One explanation put forward is that the cave was first inhabited by carnivores, which were responsible for bringing in the plentiful remains of *Australopithecus*, while the tool- and teeth-yielding horizon represents a later occupation of the cave by the ape-man himself. Such a sequence of events is excessively hard to swallow—but it is not quite impossible. Other authorities again deny that the large teeth found in the tool-bearing stratum are Australopithecine.

In 1959 a complete human skull together with a tibia was found in the horizon in Oldoway (or Olduvai) Gorge, Tanganyika, which probably dates from the very beginning of the Middle Pleistocene (although it has also been assigned to the late Villafranchian period at the end of the Lower Pleistocene). That is to say this human being was living at least half a million years ago. What makes the find of such outstanding importance is that the skull (and no doubt the rest of the skeleton) was lying in a horizon where it appears to have been associated with pebble tools and waste flakes, a hammer-stone, and the remains of food which included birds, frogs, fish, lizards, rats and mice, as well as the young of some of the gigantic animal species which existed in the region at that time—such as pigs, sheep, cattle and giraffe. Although it is tempting to assume that this individual made the pebble tools associated with his remains, the usual troublesome possibility remains that he may have been the prey of the actual tool-makers. Further evidence on this point may come from yet more recent finds in the immediate vicinity.

This Oldoway man shows a mixture of characteristics. In a general way he has much in common with the Australopithecines, and in particular he resembles them in the pattern of the molar teeth and in the fact that while these molars are huge the canines and incisors are relatively small. Both show the molars worn flat. On the other hand the Oldoway man has a very long face in which the cheek bones are like those of *Homo*, he has huge frontal sinuses but no heavy brow ridge or frontal torus. The forehead is very low but the cranium rises towards the back so that the brain capacity

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is likely to prove to be very considerably greater than that of *Australopithecus*. A feature unique among known hominids, he has a sagittal crest on the crown of the head like a lighter version of that found in the gorilla. Presumably this must be associated with the muscles needed for the extraordinarily heavy jaws which have earned him the nickname of the Nutcracker man.

The finder has given Oldoway man the name of *Zinjanthropus boisei*, but some anatomists may question whether it would not be more correct to recognize him as belonging to the genus *Paranthropus*. All are prepared to agree that he belongs to the same sub-family of the Australopithecinae. Again, while the finder has boldly claimed that '*Zinjanthropus*' is half-way between *Australopithecus* and *Homo* and therefore on the direct line of our own ancestry, other opinion may incline to see in him yet another of the unsuccessful 'dead end' branches that grow from every evolutionary tree.

It is always possible, too, that although Oldoway man is supposedly the oldest pebble-tool maker yet known* (for the tool-bearing horizon at Sterkfontein is later) implements of this same type, which are remarkably widespread in Africa, may have been made by a variety of hominids. Indeed there may have been as many human species in the continent at this period as there were of the apes in Miocene times. Two jaws found at Swartkrans in the Transvaal are claimed to represent another hominid (*Telanthropus*). The jaw found in Lower Pleistocene beds at Kanam, Kenya, was once identified as belonging to an advanced type of pebble-tool maker, but its genuine antiquity is so doubtful that it cannot be given much weight for the present.

It is likely to prove that, once begun, tool-making spread rapidly, and that its beginning was due to the assumption, perhaps by a number of different human species, of the upright stance. Walking upright has biological and mechanical disadvantages, and for survival would probably have had to be compensated for by the use of tools and weapons. This in turn would have led to a relatively rapid selection in favour of braininess and so speeded the evolution of our kind.

At this point we have to face what is now the one really crucial dispute in our reconstruction of human evolution. How soon did the pre-*sapiens* stock, that is to say the line which was to lead to *Homo sapiens*, part from that of the other hominids? In the past some authorities have held that this happened very early, and that the *Pithecanthropi*, represented by Java and Peking men, who were to dominate Asia from early Middle Pleistocene times, were a collateral branch, quite distinct from the ancestral line of the pre-*sapiens*, which developed the extreme forms of massive brow ridge and other distinctive features in Asia alone. Others see the *Pithecanthropi* as representing a long stage in the evolution of *Homo sapiens* and as a stock widespread throughout the Old World. They would include in it, for example,

* Remains of a yet older hominid, apparently with a larger brain capacity, were found at Oldoway in 1961.

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'*Atlanthropus*', the hand-axe making man of north Africa (p. 45). Indeed the extremists in this direction believe that *Homo sapiens* began to emerge as a distinct species only during the last interglacial age—and even that he was a descendant of Neanderthal man. Adherents of the first view have put a heavy weight of argument on the at present rather slender fossil evidence for the existence of men of pre-*sapiens* type quite early in Pleistocene times (pp. 49–51), while supporters of the second do their best so to belittle it as to be able to set it aside.

By suggesting that pebble-tool makers in what was to be a progressive cultural area were of so primitive and 'non-sapient' a breed, the discovery of '*Zinjanthropus*' may be said to have given some encouragement to the second 'late emergent' point of view. On the other hand, as has been said, it is possible that Oldoway man was only an unsuccessful side-branch and that there were biologically more progressive breeds already in existence.

A still more recent discovery (1961) is a skull from the overlying Chellean horizon in the Oldoway Gorge. This hominid seems to be basically of Pithecanthropic type, but has a higher forehead and other features said to point towards Steinheim man—recognized as belonging already to the genus *Homo*.

Thus it has become clear that the main stages of evolution are represented first by early Australopithecines, then by progressive *Pithecanthropi* and finally by *Homo* in its various species. Moreover, it can be claimed that hominids representing these three stages were dominant in the Lower, Middle and Upper Pleistocene periods respectively. Yet it still remains uncertain how early the more progressive 'pre-*sapiens*' element began to diverge from the Pithecanthropic line; it is always possible for what is going to prove a dominant strain to remain in the background for a time—as was true of the earliest mammals. There may have been a long period of overlap, as is indeed suggested by the evidence soon to be given for the existence of the genus *Homo* in Middle Pleistocene times.

This account will therefore follow a course between the two extreme points of view defined above. It will treat the remains of the *Pithecanthropi* and Neanderthal men separately from those of the supposed pre-*sapiens* types leading on to *Homo sapiens*. One will be referred to as the Palaeoanthropic and the other as the Neoanthropic wing. While it is no longer possible to accept these terms as standing for distinct branches of humanity, they are still convenient adjectives for distinguishing between the two wings of the broad front of human evolution. That they do represent two valid evolutionary tendencies is brought home when during the last glaciation men of fully modern type were in conflict with the Neanderthalers.

The Neoanthropic trend towards *Homo sapiens*, then, is marked by the development of large cerebral hemispheres with the corresponding high vault and full rounded back to the skull, flat mouth, small canines and a prominent chin. Another less conspicuous feature is the broadening of the back of the palate until the teeth are set in a half-oval, parabolic form, in

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contrast with the parallel-sided rectangular palate developed by the apes. This trend also saw the maintenance and further development of the relatively light skeleton, straight long bones and upright carriage already found in the Australopithecines. The tendency on the opposite—Palaeoanthropic—wing was for an increase in the volume of the brain without the growth of a lofty skull vault; the chin remained receding and the jaw very prominent, and the canines tended to be large. Certain features evolved strongly in the same direction as among the Pongidae, particularly the massive bar of bone above the eyes, and the heavy jaw.

We can now look more closely at the principal early representatives of the lowbrow wing of advancing mankind—the *Pithecanthropi* of eastern Asia. They have one great advantage over their cousins for students of our origins: they have left quite abundant remains behind them. Whereas the skeletal evidence for earlier Pleistocene *Homo* is exiguous and their existence too often has to be inferred from their tools and from the appearance of their descendants, and by inference from later events, the fossil record of the East Indian and Asiatic stock is well established. For some time after their discovery, it was usual to assign types represented by Java man and Peking man to different genera, but an accumulation of finds has led to their being united into the single genus, *Pithecanthropus*.

The most ancient of the Java fossils came from the Djetis deposits, dating from the mid-Pleistocene period. Their excavator claimed that the remains of four individuals which he discovered represented two distinct species within the genus *Pithecanthropus*, and a third belonging to a different genus. He named them *P. modjokertensis*, *P. dubius* and *Meganthropus palaeojavanicus*. The most famous of the Java men, found in 1890, some fifty years before the Djetis bed specimens, came from the Trinil beds which are rather more recent, having formed in Upper mid-Pleistocene times. Probably *Pithecanthropus erectus*, as he is named, was living in Java during the first half of the second interglacial phase. In most features he very nearly resembles the *Pithecanthropi* from the Djetis beds, and it is probably right to regard all three as belonging to a single species, the difference being no more than racial. As we shall see, the breed long continued to inhabit the region. *Meganthropus*, at present represented only by a jaw, has many features in common with the most massive of the *robustus* branch of the Australopithecines; it has given rise to a widespread belief in the existence of an early man of gigantic stature; this, however, is no more than legendary —the jaw is massive, but the African evidence shows that the individual to which it belonged need not have been of exceptional bodily size.

The *Pithecanthropi* of Java had skulls with very low vaults and an exceedingly heavy brow ridge, running unbroken across the forehead above their eyes; the chin was undeveloped, and the teeth, although set on a parabolic plan approaching that of the modern type, included slightly projecting canines. The thigh-bone found at Trinil proves this species to

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have walked upright as the name *erectus* indicates. The brain capacity of from 750 to 900 cubic centimetres falls between the average of the modern apes and man but reaches the lowest limit of *Homo sapiens*. Volumes of less than 1,000 cubic centimetres are common among living Vedda.

*Pithecanthropus erectus* was from the first recognized as a true hominid even though there is no sign of his having been a tool-maker. The rightness of this inclusion within the human pale is, however, fully borne out by his near kinsman and near contemporary *Pithecanthropus pekinensis* (Fig. 3) whose remains have been found in some numbers (though many were lost again in the Sino-Japanese war) in the Choukoutien caves near Peking. This most remarkable assemblage of mid-Pleistocene fossils shows the Asiatic stock to have been very similar to the Javanese in many simian features, although the brow ridge tended to be lighter between the eyes and the canine teeth smaller. More important, the vault of the skull was appreciably more raised, giving a brain capacity of round about 1,000 centimetres which falls just within the modern human range. There was, however, a remarkable degree of variation in brain size, the largest having a volume of as much as 1,300 cubic centimetres.

Most significant of all, the cave deposits proved the ancient human inhabitants to have been capable of chipping rough tools (p. 72) as well as maintaining fires for warmth and protection. The Choukoutien tools show beyond doubt that although these Far Eastern species of *Pithecanthropus* had many ape-like characteristics, and almost certainly belonged to a branch of humanity which had already diverged from the main stream leading to *Homo sapiens* and was to die out before the end of the Pleistocene Age, they were true men, capable of manufacture. The Choukoutien skulls are suggestive of the correlation to be expected between increase in the size of the new brain or cerebrum and the capacity to create culture.

Considering the abundance of the skeletal material from Java and Peking, it is surprising how few other fossil remains of early Palaeoanthropic men have as yet been discovered in the rest of the world. Proof that human beings of this kind were living in Europe contemporaneously with the Djetis bed men of Java and the cave-dwellers of Choukoutien is, however, provided by the lower jaw discovered in the Mauer sands near Heidelberg, also dating from the first, Gunz-Mindel, interglacial phase. This jaw is exceptionally massive and entirely without any projecting chin, yet the teeth are humanly set, and small in relation to the heavy bone structure, while the canines are not prominent. There is no doubt that this man who hunted the Neckar valley, perhaps as much as five hundred thousand years ago, belonged to the Pithecanthropic stock; as he represents a rather more evolved variant he is usually allowed a distinct species of his own, *Homo heidelbergensis*. The Mauer jaw has already a look of the later Neanderthal forms of man, and it may well be that the Heidelberg stock was directly ancestral to the Neanderthal.

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Three lower jaws with receding chins and other features in common with Heidelberg man have been found in association with Acheulian implements at Ternifine, Algeria. While it seems that Ternifine man (rather unhappily named *Atlanthropus*) also belongs to the general Pithecanthropic stock, it is impossible to suggest any more precise affinities until a braincase has come to light.

Before returning to the central theme of this chapter, the emergence and

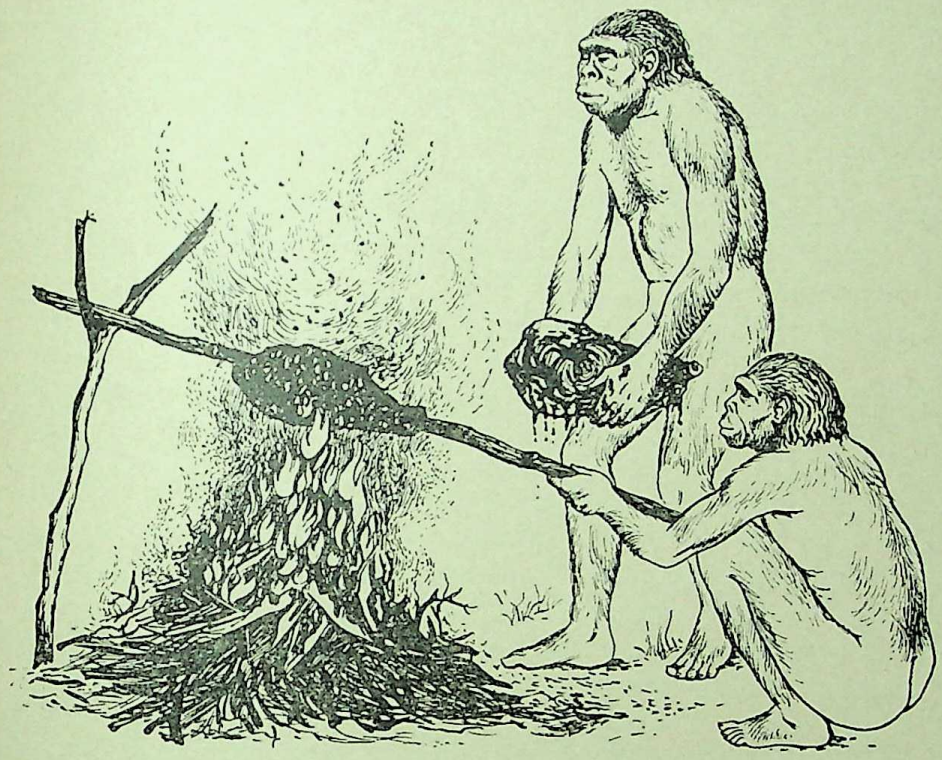

FIG. 3. *Pithecanthropus pekinensis* (Peking man): a reconstruction (after R. Carrington).

spread of our own species, it is necessary to follow to its end in total extinction this Palaeoanthropic wing of the human advance, and first to clarify the terminology to be employed. The general term Palaeoanthropic has already been explained as standing here for all species of men, whether directly related or examples of parallel evolution, having a number of features diverging from those evolved in *Homo sapiens* and generally resembling those evolved in the apes. In the later part of the Pleistocene, that is to say during the last interglacial and glacial periods, when dealing with the latest members of the Palaeoanthropic stock, we shall refer to them all as Neanderthaloid. The fully evolved Neanderthal man (*Homo neanderthalensis*) was a well-defined species dominant in Europe and adjacent areas of Africa

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and Asia; the Neanderthaloids may not have been directly related to him, for we shall see that they possessed important differences especially in bodily form, but as descendants of *Pithecanthropi* and other members of the ancient Palaeoanthropic men evolving in the same direction as the Neanderthal species itself, they can all conveniently be called Neanderthaloid.

The first two individuals to be considered come from Germany, and while they have strong enough simian features to fall within the Palaeoanthropic type, they show a further development of the progressive evolution away from the early Pithecanthropic form already visible in Heidelberg man. The earlier fossil comes from Steinheim near Stuttgart and is probably a little less than two hundred thousand years old, dating from the early third (Riss) Glacial Age. The skull shows the long forehead, pronounced torus and prognathous face of the *Pithecanthropi* but all in milder form; the back of the skull is rounded and well filled out in contrast with the flattened and angular Pithecanthropic occiput. In spite of this more capacious back to the head Steinheim man seems to have had a brain volume no greater than 1,000 cubic centimetres. The second fossil man, from Ehringsdorf near Weimar, lived during the second half of the last interglacial period, about one hundred and twenty thousand years ago. This skull has a high forehead and vault giving a brain capacity of 1,450 cubic centimetres, slightly above the modern average; on the other hand it still shows the Palaeoanthropic characters of heavy brow ridges and receding chin.

Both these ancient men who were inhabiting Germany before the onset of the final, Würm, glaciation have been classified as 'Neanderthaloids close to *Homo sapiens*'. So, too, have certain of the individuals interred at the Skhul cave on the western foot of Mount Carmel in Palestine. This group of caves so near the gateway from Asia to the west is of high interest both for its men and their cultures (p. 82). While certain of the Skhul skulls show a form as advanced as that of Ehringsdorf together with a protruding chin bone that brings them yet closer to ourselves, others from the same site and the skeleton of a woman from the adjoining cave of the Tabun approach very closely to the full Neanderthal type. These facts, together with the mixed cultural tradition evident in the Carmel caves, have been used to support a claim for a hybrid population there. Recent study of the various skeletons in the light of genetical knowledge seems to reinforce this interpretation. Whether this is true, or whether these Palestinians happened to be a very variable stock ranging widely between the Neoanthropic and Palaeoanthropic tendencies, the warning against too absolute a division between the two is clear enough.

It is now widely held that the extreme Neanderthal and Neanderthaloid breeds of man disappeared without direct issue during the last glaciation. This extreme Neanderthaler was a very peculiar species indeed, and one which one would not expect to be thriving in Europe, Asia and north Africa until as late as forty thousand years ago. The explanation now generally

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accepted is that this highly specialized species evolved from less specialized forms such as Ehringsdorf man, developing farther and farther away from *Homo sapiens* in a regression which made them increasingly ape-like both in face and in bodily form. A surprisingly large number of remains of the typical *Homo neanderthalensis* have now been unearthed, very commonly from cave deposits. The Neanderthal skull itself, coming from a valley of that name near Düsseldorf in Germany was found in 1856 (three years before the publication of Darwin's *Origin of Species*) and as early as 1848 another specimen had already been discovered, though without comprehension, in a Gibraltar cave; other important early finds were from Spy in Belgium (two individuals, associated with mammoth, woolly rhinoceros and other fauna typical of the last glaciation) and from La Chapelle-aux-Saints in south-west France where the body was exceptionally well preserved and appeared to have been ritually buried (p. 208). Since then Neanderthal remains have been found at Krapina in Croatia (as many as twenty individuals represented), the Channel Islands, two sites in Italy and several in Palestine, Spain, the Crimea, in western Asia, and at Rabat and Tangier in north Africa (see Map IV, p. 80). These remarkably numerous and widespread fossils prove the fully developed Neanderthal man to have been a homogeneous species with its own distinctive characteristics. They would not, to our eyes, have seemed attractive ones. The skull, though large, with a brain capacity averaging 1,450 centimetres, is thick-walled and low-vaulted —indeed the skull is flattened to a bunlike form, with a sharp angle at the back of the occiput and attachments for powerful neck muscles. The brow ridges, so typical of the Palaeoanthropic stock, as of the apes, are very large indeed, forming a bar of bone projecting strongly over large eye sockets. The nose is broad, the heavy jaws protruding, while once again we notice the lack of a projecting chin. The teeth are large, and the molars sometimes show a peculiarity known as taurodontism, in which the pulp cavities are extraordinarily big and the roots fused together. The long bones of legs and arms are clumsy, with thick, bent shafts and enlarged joints; the ankle bones show the weight to have been carried on the outer edge rather than the ball of the foot, while the foot itself is short and very broad. Thus the Neanderthal species that was dominant in Europe and western Asia and adjacent regions of north Africa during the first half of the last glacial age was a short, heavy figure, and as brutish of face as clumsy of figure, in some ways hardly less simian than the *Pithecanthropi* of two hundred thousand years before. Yet the large brain was there, and these men were not only skilled tool-makers but even appear to have had the beginnings of a conscious emotional life (p. 208). It was not until their sudden total surrender before the advance of the then rapidly progressing races of *Homo sapiens* some forty to fifty thousand years ago that their cultural achievements and capacity could be shown to be evidently less than those of our ancestors.

Several human fossils of Neanderthaloid types have been found in Africa,

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two of them representing a peculiar and highly specialized stock which, like the true Neanderthalers of Europe and Asia, became extinct before the end of the Pleistocene period. The earlier of the two is Saldanha man, whose skull was found in 1953 at a site sixty miles north from Cape Town; the bones of various extinct animals associated with it (an elephant, short-legged giraffe and giant pig) suggest that this individual was living at the end of the last African interpluvial. The later specimen, but a much older discovery, is Rhodesian man found in 1921 during quarrying of lead and zinc ores at Broken Hill, Northern Rhodesia. Its age is uncertain, but the associated fauna is recent. Rhodesian man is distinguished by an extraordinary development of the facial bones and in particular of the brow ridges. The last feature is present also in Saldanha man whose facial bones are missing. Looked at from the front the skulls show prodigiously massive rings of bone round the eye sockets. Yet in other respects these men seem to have been very close indeed to *Homo sapiens*; their crania are akin to the modern Australoid form, and *Homo rhodesiensis* had straight limbs and upright carriage.[2] A third skull found on the eastern shores of Lake Eyasi in Tanganyika was probably a near contemporary of Rhodesian man, but appears to be more nearly related to the original *Pithecanthropi* than to either Neanderthal or Rhodesian man. With his primitive traits, this individual has proved difficult to classify, but when the much-needed revision is made, he may, like Rhodesian man, be included within the genus *Homo*. These three fossils are enough to suggest that various breeds of men with Palaeoanthropic characteristics survived in Africa, continuing to flourish in remote culs-de-sac just as *Australopithecus* had done before them, and the great apes still do today. In the south one group evolved the strangely exaggerated features of the Rhodesian and Saldanha men, a race which may have lived on for a time after *Homo sapiens* had swept the Neanderthalers from Europe and Asia. Possibly the last, most beetling browed, of them all were still hunting in southern Africa when the Solutreans were carving the great reliefs of Cap Blanc some twenty thousand years ago. It seems that in another remote region a Palaeoanthropic species held its own equally long; this was in Java where the *Pithocanthropi* may have evolved undisturbed throughout the Pleistocene. In the early 1930's excavation recovered as many as eleven skulls from late Pleistocene deposits at Ngandong on the Solo river. Though considerably larger than those of the Djetis and Trinil skulls, the brains of these men had been on the small side with a range from 1,150 to 1,300 centimetres; once again the brow ridges were heavy (though not equal to those of the Africans) but the *foramen magnum* was set as in modern man and, to judge from a single tibia, the limbs were also like those of *Homo sapiens* with none of the clumsy characteristics of the Neanderthalers. Although they had much in common with the Rhodesian and Saldanha men, it seems most likely that these late Java men were the direct descendants of the local *Pithecanthropi*.

Having followed the history of Palaeoanthropic man to the straggling ends

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that lead to its extinction, it is worth while to give some last thoughts to its significance. We have seen how its late Neanderthaloid representatives had many sharp differences between them, and how it seems probable that such examples as *Homo neanderthalensis* and *Homo rhodesiensis* may well have been the comparable products of long-separated lines of evolution. Looking back much farther we can see a series of similar events. First the Pongidae themselves splitting off from the primate stem, the Australopithecines sending off their *robustus* branch; then the hominids developing their Palaeoanthropic wing, and finally the Palaeoanthropic wing itself regressing in the simian direction in the evolution of the Neanderthal race. Is it not possible that there may be some factor in the natural environment, presumably some chemical factor of nutrition leading towards the development of the common characteristics that we refer to, very roughly, as simian? It should be recalled that while some of these characteristics, such as the prominent mouth and receding chin, were truly 'primitive' in the chronological sense, others, and particularly the frontal torus, are not primitive in that sense but highly evolved specializations common to all the lines under consideration. It is still impossible to prove this theory, but it would suggest an explanation for a trend which appears to have taken place not once but repeatedly throughout the long history of the primates.

We are ready now to return to what must be the main theme of this chapter, as it is the basis of all that follows: the emergence and spread of our own species.[3] It is a history which will take less time than that of the human failures, for as it happens fewer fossils of pre-*sapiens* than early *Homo sapiens* have been recognized. Mention has already been made of the lower jaw from Kanam, Kenya, found in deposits which would date it to the first pluvial and make it a contemporary of Oldoway man. This mandible comes very close indeed to the modern form except that it is rather more massive and has larger pre-molar teeth. After its discovery, it was suggested that the fossil was not in fact contemporary with the apparently associated animal remains dating from the earliest Pleistocene. This remains the opinion of the majority. But if its great antiquity be accepted, then the Kanam jaw undoubtedly implies that the ancestors of *Homo sapiens* had already begun to diverge from the Palaeoanthropic stock by the end of the Pliocene.

For the Middle Pleistocene period there are two other finds of fossil men which could be on the direct line of our own ancestry. But one of them, from Kanjera in Kenya, a site neighbouring on Kanam, has also been called in question. Fragments of four skulls were discovered at this site; they were thicker, and rather lower in the vault than is usual in modern man, but with their high foreheads and lack of brow ridges they certainly qualify as belonging to our species. As, like the Kanam jaw, the correct stratification of the Kanjera[4] skulls is disputed, for an unquestionably authentic Middle Pleistocene man approaching *Homo sapiens* we rely on Swanscombe man, named from a skull (probably a woman's) found in a

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Thames-side gravel pit in Kent. Two fragments of the cranium were found in 1935–36 and another in 1955; the frontal and face bones are missing. In common with the Kanjera skulls, this one is thicker than is normal today, but the whole modelling of the head is indistinguishable from that of a modern man, while at some 1,300 centimetres the brain capacity is near the present average. Although brows and face are missing, the anatomy of the rest of the head makes it certain that although the features and brow ridge may have been on the heavy side, they did not approach the development found in extreme types of Palaeoanthropic men. The Swanscombe fossil enables us to claim with confidence that men at least close to our own species were living in the Thames valley by the end of the second (Mindel-Riss) interglacial, some two hundred and fifty thousand years ago.[5]

The third find of Middle Pleistocene fossils of *Homo sapiens* was made in a cave shelter at Fontéchevade, in the Charente Department of France, where a woman's cranium and a small part of the frontal bone of a man's skull were lying among hearth ashes in an undisturbed cave deposit. Except for the thickness of the bone, which seems to be characteristic of these early members of our species, these skulls had high, rounded foreheads and were in every way identical with those of modern man. The Fontéchevade remains had become incorporated in the cave earth in the last (Riss-Würm) interglacial and are therefore approximately one hundred thousand years later than those of Swanscombe man. Above the horizon in which they were found, and divided from it by an unbroken stalagmitic deposit, was an occupation layer containing tools of a type almost invariably attributable to Neanderthal man. Whether or no the man and woman had been actual inhabitants of the cave (p. 77), this stratification proves that *Homo sapiens* was in the area before it was dominated by the Neanderthalers.[6]

With Fontéchevade, we have reached the latest known fossil of *Homo sapiens* type before the period of Upper Palaeolithic culture and late Pleistocene Age when, with surprising speed, our forebears contrived to inherit the earth and we find ourselves dealing not with different species, but merely with the differences of race with which we are familiar today. We leave a world where biological distinctions inevitably claim much of our interest for one where man's various cultural achievements become all important. Unfortunately this moment of transition is in many ways unusually obscure. While we are confident in our knowledge that men of our own kind were in Europe during the second interglacial and can hardly doubt that they were also in Africa at this time,[7] the main centres from which our kind spread during the last glaciation, and the times and places where the main racial types emerged, remain very imperfectly understood.

This, however, is essentially a cultural problem; all that it remains to do here is to describe the several types of men known to have been inhabiting the Old World during its last glaciation and to see how far they can be recognized as the forerunners of modern racial types. It is logical to begin

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in Africa, the probable cradle of the species. Apart from such freakish survivors as Rhodesian man, the Late Pleistocene Africans show a division into two contrasting types, an Australoid (resembling the Australian aborigines) and a Bushmanoid, ancestors of the Bushmen who were once more widespread in Africa.[8] We know them now as a helpless pygmy race allowed to live only on sufferance, but when first they peopled the continent they were a vigorous race of normal stature. Actually one of the earliest skulls, from Florisbad in the Orange Free State, seems to represent a crossing of the two races, but with Boskop man, represented by a skull cap found in the Transvaal, we have the characteristic Bushmanoid head, wide, with a full smooth forehead, giving a large brain. Both these South Africans were living during the last pluvial phase: Carbon-14 analysis has given the Florisbad fossil a date of 'more than forty-one thousand years old'. Another individual who must have been very much like Boskop man is recalled for us by a skull from Singa, a site two hundred miles south of Khartoum on the shores of the Blue Nile; he, too, was a big-brained proto-Bushman, but his brow ridges are sufficiently developed to suggest a touch of Australoid in his ancestry. The latest of the Bushman ancestors is the man from Fishhoek, again in South Africa, who seems to have lived no more than fifteen to twenty thousand years ago, when the final pluvial was approaching its end. A contemporary of this proto-Bushman in the Australoid branch has been recognized in the skull from Cape Flats near Cape Town. This skull has sufficiently prominent brow ridges to suggest that the earlier 'Neanderthaloids', Saldanha and Rhodesian man, may have been a highly specialized offshoot from the African Australoid type.[9]

From about ten thousand years ago, when the last pluvial was over and the Sahara beginning to return to desert for the last time, in South Africa the Australoids and proto-Bushmen were giving way to the typical small Bushman.

At the same time the first men of Negro race had appeared north of the Equator, the oldest skull believed to be of proto-Negro type coming from Asselar, over two hundred miles north of Timbuktu. Of Late or post-Pleistocene Age, it cannot be exactly dated.[10] In this skull the upper central incisors had been deliberately struck out in early life, a practice still widespread among Africans today. Where they originated in still unknown; we shall see that the arrival of a Negroid race in Europe has been suspected but is not generally agreed. Undoubtedly, however, men closely related to some of the races that took possession of Europe after the extinction of Neanderthal man were present in north Africa during and after the last pluvial. The difficulty of absolute dating on either side makes it unwise to use the African skeletal material to prove the invasion of Europe from Africa or of Africa from Europe during this period. The connection may in any case have been partly indirect, via east Africa and south-west Asia (p. 87). The oldest skeleton from the cave of Afalou bou Rummel in Algeria is very similar to that of

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the early Upper Palaeolithic Combe Capelle man from France (below); so too are the narrow-headed, non-prognathous skulls from Gamble's Cave, Elementeita, in Kenya. These Elementeita people were of Mesolithic culture (p. 90) and prove the presence of non-Negro races in east Africa at this late date; supporting evidence is provided by two contemporary, Combe Capelle type, skulls from Oldoway and the Naivasha shelter.

On the other hand the skeletons from the upper levels of the Afalou cave, as well as others from Mectha el Arbi and Beni Segoual, approximate quite closely to a very different European race, the powerful, heavy-featured Cromagnons who, far back in their ancestry, may have had some genetical inheritance from the Palaeoanthropic breeds. The latest discoveries suggest the people of the Capsian culture were not of this type but instead were Mediterraneans. The Natufian Mesolithic people of the east Mediterranean were slender and short, with long heads and delicate features; they seem to represent the original Mediterranean Semito-Hamitic stock before the division into linguistic groups.

In Europe itself remains are much more numerous and their cultural contexts more coherently understood (p. 83). The earliest recognizable type is that of the Combe Capelle skeleton, already referred to for its similarity to the earliest remains from the Afalou cave. This individual was certainly one of the bearers of the first Upper Palaeolithic culture established in western Europe and hence one of the dispossessors of the Neanderthal population. The skull is long and narrow with a small forehead and fairly low vault; it may represent a type ancestral to the modern Mediterranean race—a comparison supported by the presence of Combe Capelle-like skulls in Africa.

The racial type next in point of time is the Cromagnon, the best-known and most distinctive of the late Pleistocene races of Europe. They were a tall, very muscular people with long heads possessing rather loftier vaults than the Combe Capelle type, giving a very high average brain capacity. In spite of the dolichocephalic skull, the face was short with (as we have said) marked brow ridges and a high-bridged nose. This Cromagnon type was powerful of body, and effective culturally as well as physically. It is certainly still represented in the European population today. Probably descended from the Combe Capelle people and very much like them were the mammoth-hunting Predmostians; on the other hand two skeletons of much the same date found away to the south in the Riviera cave of Grimaldi have been claimed to show a Negroid strain. A skull with prognathous face and a broad nose was also found at Markina Gora in the Voronezh region. Whereas it is possible that the prominent jaws of the Grimaldi skulls may be due more to restoration than nature, there can be no doubt of the Negroid combination of features in the skull from Markina Gora.

One other of the Late Pleistocene, Upper Palaeolithic races of Europe demands to be singled out, a type which was one of those responsible for

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creating the last and most brilliant Upper Palaeolithic culture of south-western France. This was Chancelade man, whose skull is universally admitted to have Eskimoid affinities in its vertical sides, pointed keel, and somewhat broad cheek bones. Although the old view that this race withdrew northwards in the wake of the ice after the last glaciation to form the ancestors of the modern Eskimo has now been much blown upon, it may have an element of truth in it. There seems no reason to deny that Chancelade man may have been involved in both the genetical and cultural inheritance of the Eskimo peoples.[11] However this may be, there is now a convergence of evidence from physical anthropology, linguistics and ethnology, that the Eskimo were of Old World origin and that the culture was largely Asiatic. Their spread into North America is connected with the appearance of the Palaeo-northern cultures there. One of the most telling indications of this movement is the occasional occurrence among American Eskimo of Blood Group B, which is frequent in Asia but absent from the American Indian population.

It will have been noticed that all these races of *Homo sapiens* who made the population of Europe in the late Pleistocene even more sharply differentiated than it is today, tended towards the dolichocephalic, or long, narrow, head form. A rather broader skull has, however, been found occasionally, notably at Solutré near Mâcon, and this brachycephalic element appears to have been reinforced in post-Pleistocene times. At the Mesolithic site of Ofnet in Bavaria there was found a ritual burial of a nest or cluster of skulls many of which showed extreme broad-headedness. Thus it seems that while the forebears of the Mediterranean, Nordic and other intermediate European types were already in Europe during the last glaciation, the Alpine race, typical inhabitants of the great mountain backbone of the Old World, may have spread into Europe at a rather later date. On the other hand it is not impossible that the race may have evolved locally from the indigenous population.

In eastern Asia the known remains of Late Pleistocene men are extraordinarily scanty. In the Upper Cave of Choukoutien three skulls were found that probably date from the very end of the period or even from early post-Pleistocene times. They have a general resemblance to the Cromagnon type, but are considered to have recognizable Mongolian features. Roughly contemporary are the only known human remains of the period from southern China; a fossilized skull cap and fragmentary upper jaw from the Kwan-shantse valley fifty miles south-east of Cheng-tu. These had belonged to a young girl living in Late Pleistocene times and of much the same racial type as the inhabitants of Choukoutien.

Although there is no doubt (pp. 23 and 91) that human beings began to people the American continent at this time,[12] probably during the last phases of the Würm glaciation, no skeletal remains certainly as early as this have as yet been identified. Of the two least doubtful finds, the girl from Pelican

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Rapids, Minnesota, and the man from Tepexpan, Valley of Mexico, which would both be about ten thousand years old if they are contemporary with their geological horizon and not intrusive, are both of Mongoloid type. Later remains, and the surviving American Indians, leave no doubt that the pioneers who entered the continent from Siberia to Alaska were predominantly of Mongoloid stock, probably several different groups of Mongol people following one another across the land-bridge. There appears, however, to have been a primitive Australoid strain among them.

Enough is known to enable us to see Late Pleistocene and post-Pleistocene times, say from 40,000 to 8000 BC, as the main formative age for the races of man. This was the period when *Homo sapiens* (after some great concentration of energy, of numbers and perhaps of social organization which may have taken place in north and central Africa or south-west Asia and was certainly constantly renewed in secondary centres) spread throughout the Old World and at last streamed on into the Americas. This was the period, too, when areas of differentiation divided geographically and by other barriers of which we know nothing, incubated the dominant racial types that share the world today. Sun and frost, forest and plain, humidity and dryness, height and latitude, diet and water content, a variable inheritance from the remoter past and the chance movements of peoples, all united during these millennia to give our single species the differences of height and proportion, of facial structure and skin colour, of shade and texture of hair, which make the rich variety of mankind. No other species save our own domesticated dog has so remarkable a range of form while yet remaining one species.

The whole skeletons and scraps of skull that modern man has found and is finding in ever-increasing numbers have given us some glimpses of this great formative process, but there is still a sorry gap between the interpretation of these scattered fossils and an account of the races of man as they were in early historic times, and as they remain today save for the prodigious spread of the European races.

To make a full and coherent history linking these fossil records with the racial pattern in historical times is still beyond us. Although our knowledge of human types, so far as their skeletal varieties are concerned, is naturally much greater for later prehistoric periods than for the Palaeolithic and Mesolithic Ages, nevertheless our picture of the establishment of races and their subsequent expansion or decline is still exceedingly patchy.

As will emerge in the course of this history, before the sudden spread of the white races after the fifteenth century there were six major racial groups with more or less well-defined geographical ranges. These were the Negroid, Caucasoid, Mongoloid, Bushmen, Australoid and Polynesian (Pacific) (Map II).

The forest zones on either side of the Equator in Africa were the main range of the Negroid peoples with their very dark skins, often everted lips, and tightly twisted (ulotrichous) hair. Even in this area they varied very much in stature, from the pygmies of the tropical rain forests to the Nilotic

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tribes, some of which are among the tallest of all mankind. Other black-skinned people with comparable characteristics lived along a scattered trail eastward from central Africa; from south-east India across the Indian Ocean to the Philippines, New Guinea, Melanesia, tropical north-east Australia and Tasmania. It has already been remarked that proto-Negroid skeletons have been claimed for Europe in late Pleistocene times; the earliest from north Africa dates from about the end of the last glaciation (p. 51). The centre of their racial differentiation is uncertain, but the western Sudan seems the most probable region. Certainly they were already expanding southward at the expense of the Bushman races before the fifteenth century AD, an expansion which continued in the following centuries with the march of the warlike Bantu tribes into east and south Africa. Although material evidence is lacking, the Negroid peoples of southern Asia and the islands are generally considered to be of great antiquity, especially the forest pygmies of India, the Andaman Islands, the Malay Peninsula, some parts of the Philippines, Melanesia, Australia and Tasmania. Whether all these peoples are related to one another and to the Negritoes of Africa is unknown; it seems probable. On the other hand it is possible to see in them men who were shaped by the rain forests in which they had to find a living.

The Caucasoid or white race of early historic times inhabited a solid territory to the north of the African Negroids, comprising the central land mass of the Old World in north and north-east Africa, Europe, and western Asia as far as India and Ceylon. As might be expected from what is known of their Palaeolithic forebears, they have always varied widely, particularly in the colouring of skin, hair and eyes and in size and bodily form. Dane and Watusi African, Semite and Brahman cover a great range of features. Nevertheless the Caucasoids are generally distinguishable by narrow, often strongly bridged noses, soft and often wavy or curly (cymotrichous) hair, heavy growth of beard and skins which among the majority of Caucasoids are fairer than those of any other race. The extreme unpigmented Nordic type with yellowish or reddish hair, blue or grey eyes and pinkish white skin that burns on exposure to strong sun was limited to Europe and dominant only in the cool and temperate zones in the north and west of the continent. It has been shown to what considerable extent the heavy-featured and muscular Cromagnon type of Caucasoid predominated in Europe, north Africa and Asia during much of the Upper Palaeolithic and Mesolithic Ages; this inheritance is still important among modern Europeans. On the other hand the smaller lighter-built and more delicately featured forerunners of the Mediterranean race seem to have asserted themselves later in the Upper Palaeolithic period. We shall find them spreading from south-west Asia into north Africa rather after the arrival of the Cromagnons there (p. 89). This same light-boned Mediterranean type will be found carrying the practice of farming along the Danube as far as Belgium, and along the Mediterranean shores to Spain, France and Britain.

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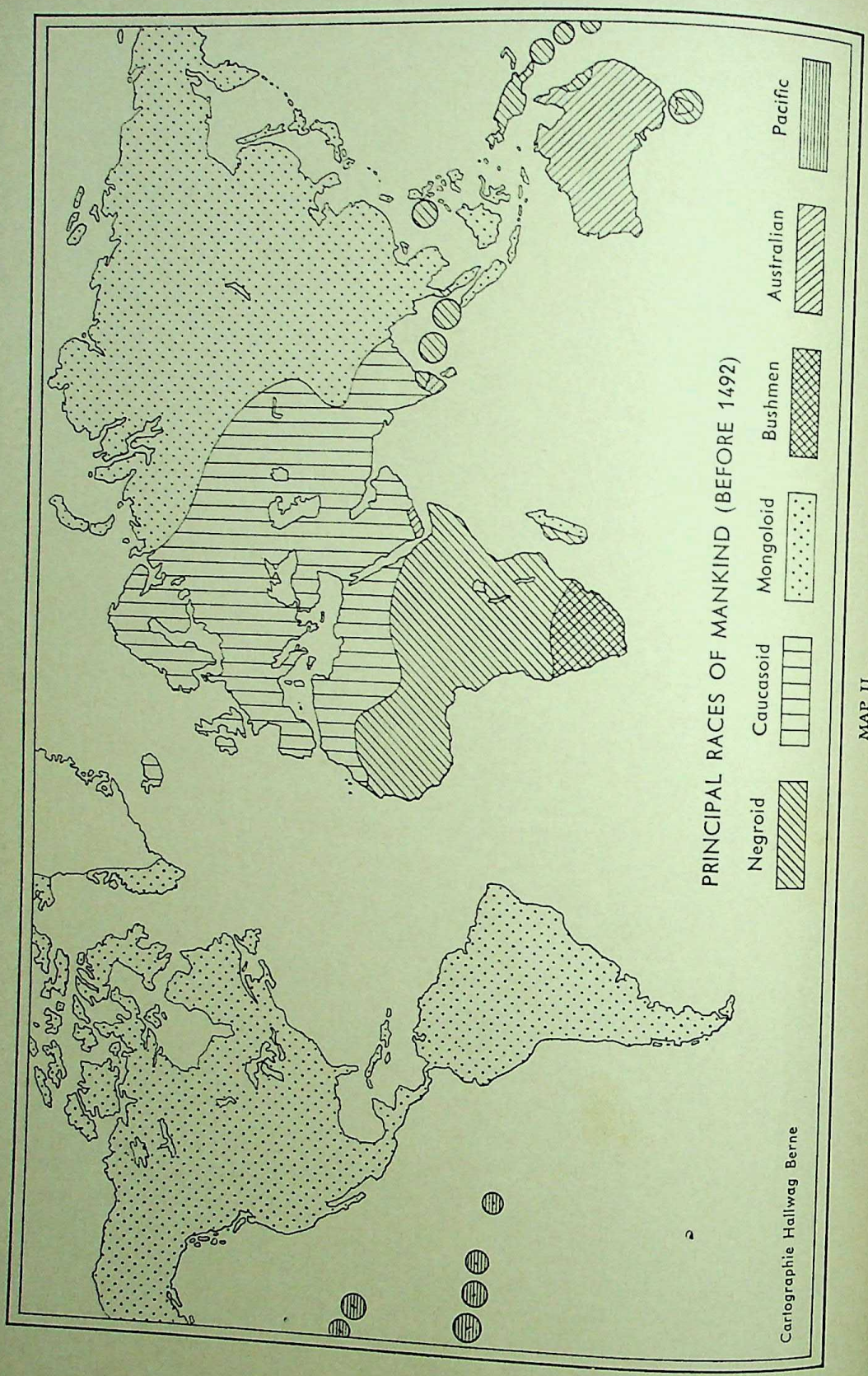


MAP II

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East of the Caucasoids stretched the vast ranges of the Mongolian peoples, covering all northern and eastern Asia, extending down the Malay Peninsula to Borneo, Sumatra and other East Indian islands (with an extreme western outlier in eastern Madagascar), and including the large offshore islands of Formosa and Japan. Peoples of Mongoloid type were also to be found, if rather sparsely, over the whole of the American continent. These peoples are characterized by coarse, black, straight (leiotrichous) hair, noses that are narrow but commonly rather flat, broad cheekbones, olive to yellowish, coppery or brown skins and dark eyes; the eyes are often embedded in layers of fat which help to form the fold of the skin across the corner of the eye known as the epicanthic fold. The cradleland for the Mongolian race, which is essentially specialized to endure extreme cold, is without doubt in north-east Asia. It has been shown that the latest dwellers at Choukoutien had only a slightly Mongolian cast of countenance. As the great mountain mass of Asia barred their passage westward, the Mongoloids expanded to the south and east until they attained their maximum distribution in Asia, the Asiatic islands and America already described. In Asia and the islands they destroyed or absorbed various older populations (p. 59) but in America they found virgin territory.

These three racial systems, the Negroid, Caucasoid and Mongoloid, were by far the most numerous and dominated all the great land surfaces of the northern hemisphere. The historical development of mankind was in their hands. In South Africa, Australasia, many of the Pacific islands and in small patches on the southern extremities of Asia were smaller racial pockets, some of which could justly be called remnants and archaic both in race and culture. All without exception have dwindled yet further before the spread of the Caucasoid race.

Among these peoples of the southern hemisphere three are sufficiently important and well defined to rank beside the major groups already described and make up the sixfold system of mankind. First were the Bushmanoid people once, as has been explained, widespread in Africa, but throughout later prehistoric times steadily pushed southward towards the tip of the continent. Today they are reduced to the Bushmen getting what livelihood they can by hunting in the Kalahari desert, and a Hottentot element within the Cape Coloured population of the Union of South Africa. Although their ancestors were of normal stature and rather abnormally great cranial capacity, the Bushmen are now very small, averaging less than five feet, with yellowish brown skin, rather flat faces, a suggestion of the epicanthic fold and the extraordinary 'peppercorn' hair in which the spiral curl is so tight that the scalp is exposed between the twisted tufts. The Bushmen have two other peculiarities that are always portrayed in the cave painting made in their more prosperous days: protruding fatty buttocks and a penis which projects forward without erection. Whether or not one judges them to be attractive, these three bodily characteristics are unique.

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The second of the smaller racial groups is the Australoid, a group difficult to define and which may include many archaic peoples surviving from Pleistocene times who are not in fact closely related. In Australia itself there is a considerable contrast between the desert-dweller who sparsely inhabited the greater part of the country and those aborigines, now reduced to near the point of extinction, who lived in the Murray River basin and Gippsland. The hunters of the desert are brown-skinned, tall and slender with wavy hair and beards but little body hair; in the formation of their skulls they seem to show a very archaic inheritance with a larger genetical element from Palaeoanthropic stock than any other living people. This element seems to have been even more marked in the past, to judge from certain skull finds—especially those of Talgai and Cohuna. They have narrow, low-vaulted crania, with bony ridges above the eyes; the teeth are large and often prominently set, the nose broad. They have with reason been likened to Solo man (p. 48). The aborigines of the more fertile and temperate south-east had many archaic features in common with their neighbour, but their bodies were both more massive and very much hairier while their legs and arms were relatively short; in colouring they evidently carried genes for fairness, for their skins when untanned were pale brown, their eyes sometimes green or blue and their hair occasionally red. It has been suggested that these were the first men to settle in Australia, and that they have affinities with a primitive racial strain still surviving, though deeply submerged, in Europe. If they were the first comers, then they were followed later by the desert people and finally by the possible Negrito element in the tropical north-east and Tasmania (p. 55). At present, however, there is no evidence for this sequence and some authorities still believe that the Tasmanians, instead of being partly a Negrito group drifting in later from New Caledonia, were in fact a survival from the oldest population in Australia.

The Gippsland Australians are often likened to the aborigines of Japan, the Ainu, who have long been dispossessed of most of their territories and pushed into the cold northern island of Hokkaido. The Ainu are short and thickset with white to pale brown skin colouring; they have wavy or curly hair which grows heavily on both the face and body; the brow ridges are strongly developed (though much less massive than they often are among the Australians), but the nose is straight. There seems no doubt at all that these earliest inhabitants of Japan (who may have reached the area before its complete isolation) have affinities with ancient stocks still genetically represented in modern Europeans.

The other considerable group of Australoids is to be found in south and south-east India where the Dravidian stock, probably descendants of the pre-Caucasoid aborigines of the greater part of India, show many of the recognized characteristics; the type is represented again in the Hadramaut and traces of it survive submerged throughout the East Indies and Pacific

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islands. It will be recalled that there was a widespread Australoid element present in late Pleistocene Africa; there seems no doubt that this type, whether or not it is held to be a once coherent and related racial group, represents a survival of an early spread of humanity throughout much of the Old World; in Africa it virtually disappeared, in Asia and the Asiatic islands was almost though not wholly swamped by the southward and eastward spread of the Mongoloid peoples. Only in Australia, that living museum of zoological survivals, could the Australoids remain master of wide territories, until at last, but inevitably, the white race arrived to dispossess them of all that was desirable in this their one great retreat.

The sixth and last of the racial groups is the Polynesian and Micronesian. These people with their often easy Oceanic life are of a very generalized human type, usually dark-skinned with wavy black hair and dark eyes, narrow and sometimes well-bridged noses and mouths that are neither prominent nor thick-lipped. Most are of average height, though here and there, as in Tonga, there is a strain of exceptionally tall stature. This physically fine stock probably originated from a mixture of Mongoloid peoples with the native Australoid or Ainu-like inhabitants of the East Indies, Philippines and other islands off the Pacific shores of Asia.[13] As the move to these remote islands of the Pacific was among the last carrying our ubiquitous species to the humanly habitable corners of the earth, it falls well within historical times and so will have its place later in this history.

This ends the account of the emergence, spread and differentiation of man as a zoological breed. It is a history that begins with rival genera and species, then narrows to the races of *Homo sapiens*, the single species which is mankind. Through the tens of millions of years of the Cenozoic era the human frame, so familiar a possession of each one of us, has been seen slowly shaping among the primates, until by Pleistocene times a large-brained, upright biped by beginning the creation of culture has won human status. Throughout this vast stretch of time the increase in the size and complexity of the neo-pallium or New Brain makes the central theme; in the fossil skulls which are our principal record for the human epic we see the forehead and vault rising, their capacity swelling. Whether or not he is inclined to indulge in the modern name-calling of highbrow and egghead, no one can question that man is distinguished as the highbrow or egghead of the primates. Here, housed within the curved bone plates of the skull, is the most subtle and complex instrument in the world, which, at the command of the whole man, has created the rich and varied cultures, the superb individual works of art, the inspiring if never final systems of thought, that make the history of mankind.

These achievements, the exalted and the humble, have come from the many races of mankind evolved during the last forty thousand years. All races are one in that they can mate together and produce children who may be

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healthy, fertile, beautiful and intelligent, yet in their remaining separate and various lies one of the delights of the existence of man on earth. That after thousands of years of interbreeding and response to the various conditions of their native lands they may have developed abilities and weaknesses peculiar to themselves seems likely enough and should certainly not be denied. Without this variety our future would be less abundantly promising just as our past would have been infinitely the poorer. No one can claim that a violin is a better or a worse instrument than a clarinet; what is glorious is the whole symphony orchestra. So it is with mankind.

## NOTES TO CHAPTER II

1. Professor G. F. Debetz observes that 'the question of man's cradle land cannot be regarded as completely solved. There is no doubt that Australia, America and in all probability northern Eurasia must be excluded as possible zones. The remainder of the earth's land surface (southern Eurasia and Africa) is too vast to be considered as the cradle of the species since the emergence of man most certainly took place on a more restricted territory. At the present time, however, it is impossible to define the boundaries of this territory more exactly. Many scholars favour Africa as the answer to this problem. It was in Africa that the fossil apes—the Australopithecines—which are the most man-like—were found. It is by no means impossible, however, that the cradle of man was one part or another of southern Eurasia'.

2. Professor G. F. Debetz stresses that to some scholars it has not been proved that the limb bones found at Broken Hill belonged to the same individual, or even species, as the skull.

3. Professor G. F. Debetz recalls that, 'the opinions of specialists sharply diverge on the question of the origin of *Homo sapiens*. The essence of this divergence is concentrated in the question of the genetical interrelations of *Homo sapiens* and the Neanderthal Man. Some specialists claim that the Neanderthal Man was the ancestor of modern man. Others consider that the Neanderthalers and modern man developed independently of and parallel to each other. The more consistent adherents of this point of view even consider it likely that the genus *Homo* descended directly from Pliocene Australopithecine stock while the Pithecanthropi were a collateral branch which developed the extreme forms of massive brow ridge, heavy jaw and other somewhat simian features. The adherents of this conception thus exclude not only the Neanderthalers but also the Pithecanthropi as man's forebears.

   'Adherents of the other point of view accept the general outline of the development of the human species from the Pithecanthropic stock to the Palaeoanthropic and on to the Neoanthropic. This outline is substantiated by the fact that all the well-dated Premousterian and early Mousterian finds known to science unquestionably refer either to Palaeoanthropic stock or to even earlier forms. In Europe these are the Mauer jaw, the lower jaw from Montmorin, various fragments from Weimar, the skull from Steinheim, skeletons from Krapina, the natural endocranial cast from Hanovce, limb bones from Kiik-Koba; in Africa there are the finds from Rabat, Eyassi, Saldanha, the remains of Atlanthropi; in Asia the remains of Pithecanthropi and Sinanthropi.

   'But also from this point of view there are grounds for assuming that not all the branches of the Pithecanthropic and Sinanthropic stock and the Neanderthalers produced *Homo sapiens*. Many of the early and very early hominids disappeared from the face of the earth without leaving any direct issue. The presence of such specialized features as pronounced taurodontisme (extraordinarily big molar pulp cavities), the distinctive structure of the nasal cavity and other features in West-European Neander-

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thalers, render highly improbable the hypothesis that they were the forebears of modern man, the more so if one recalls that the Cro-Magnon type of Western Europe differed sharply in his structure from the West-European Neanderthalers.

'It is possible that at the beginning of the Mousterian period there separated from some Palaeoanthropic breed a branch of hominids whose development led to the emergence of *Homo sapiens* at the end of the Mousterian or the beginning of the Upper Palaeolithic. As to the zone where this process of development was most intensive, this remains a matter of dispute. It is possible that this zone included south-west Asia and its large adjacent regions.'

4. Geological observations by P. G. H. Boswell have led many authorities to contest the dating of the human remains found at Kanam and Kanjera to the Lower Pleistocene (Villafranchian) or Middle Pleistocene. See P. G. H. Boswell, 'Human Remains from Kanam and Kanjera, Kenya Colony', *Nature* (March 9, 1935).

5. Professor G. F. Debetz points out that the Swanscombe skull is not universally recognized as conclusive evidence that *Homo sapiens* lived in the Thames valley in the Gunz-Mindel interglacial: arguing from the relation between the width of the occiput and the height of the vault, the relation of the parietal chord to the parietal arch, the *foramen magnum* index, the distance between the inion point and the inner occipital tubercle, many scholars believe that affinities exist with Neanderthal man. $X^2$ has been worked out on the basis of these features to determine the real extent of the probability of the Swanscombe skull belonging to modern European series and this probability seems to be practically zero ($X^2$-test of Karl Pearson for the statistical comparison of characteristics of more than two groups). See Y. Y. Roginsky, 'Concerning the Antiquity of *Homo sapiens*', *Sovetskaya Etnografia*, No. III (1947); S. Sergi, 'I profanerantropi di Swanscombe e di Fontéchevade', *Rivista di Antropologia*, XL (1953), pp. 65–72; F. C. Howell, 'The Place of Neanderthal Man in Human Evolution', *American Journal of Physical Anthropology*, IX, n.s. (1951), pp. 379–416.

6. Some scholars hold that the very fragmentary nature of the Fontéchevade skull makes it impossible to establish an exact diagnosis; it has been pointed out that certain features of the skull bear a resemblance to the Neanderthal type.

7. Professor G. F. Debetz notes that those scholars who do not accept the early dating of the human remains found at Kanam and Kanjera consider that the hypothesis that *Homo sapiens* lived in Africa already during the second interglacial does not rest on actual facts.

8. Dr Birket-Smith points out that in connection with the Bushmen mention should be made of the Hottentots, who are racially related to the Bushmen, and the Pygmies, where this is probably not the case. See K. Birket-Smith, *Wir Menschen* (Zürich, 1944).

9. Professor G. F. Debetz observes that the view that the African Australoids gradually became highly specialized Palaeoanthropic breeds, i.e. approached the Saldanha and Broken Hill type, is contested by some authorities. It is open to objection on the grounds that the only argument in favour of such an assumption would be the prominent brow ridges on the Late Palaeolithic skull from Cape Flats. But prominent brow ridges are not a rare phenomenon in different parts of the world even now as well as in the Neolithic, the Bronze Age, etc. For this reason there is some doubt whether such data are adequate for substantiating a theory of human genealogy which embraces the whole of the Pleistocene.

10. Professor A. C. Blanc remarks that the age of the Asselar skeleton, assigned to the Late Pleistocene, has recently been queried. This dating was given by Th. Monod, but after revising his opinion on this point he now regards this find as relatively recent (post-Palaeolithic). See Th. Monod, 'Sur l'âge de l'Homme d'Asselar', *Historia Naturalis*, I, 4 (1946), pp. 81–2; A. C. Blanc, 'Sull'età geologica dell'Uomo di Asselar', *Rivista di Antropologia*, XXXV (1947), p. 420.

11. The majority of anthropologists today reject the view that an affinity exists between the Chancelade type and the Eskimo. See H. V. Vallois, 'Nouvelles recherches sur le



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squelette de chancelade', *L'Anthropologie*, L (1941), pp. 165–202. Nor is there any longer much support for the arguments in favour of a connection between the late Upper Palaeolithic Magdalenian culture in western and central Europe and the Eskimo. All the available ethnographic and archaeological data testify to ties linking the forebears of the Eskimo with the Asiatic and American continents, not with western Europe. See H. G. Bandi, 'Die Frage eines Zusammenhangs zwischen dem Magdalénien und der Eskimokultur', *Jahrbuch der Schweizerischen Gesellschaft für Urgeschichte*, XL (1949–50), pp. 75–92.

12. See p. 101, n. 8.

13. Dr P. Bosch-Gimpera points out that many authors have included the Polynesians in the Europiform group. See E. v. Eickstedt, 'Die Biodynamik der Europiden', *Historia Mundi*, I (Berne, 1952), pp. 115–34.

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CHAPTER III

# THE HISTORY OF THE PALAEOLITHIC AND MESOLITHIC CULTURES

THIS chapter will attempt to chronicle the events of Old Stone Age, or Palaeolithic times, that is to say the emergence of cultural groups, their movements, mutual influence upon one another, their expansions and disappearances. Not very much will be said about the modes of life, technology, arts and beliefs of the peoples concerned, for these will be the proper subject of the following sections. It is necessary to pursue these events in space and time because without some knowledge of them cultural history cannot be properly understood. Yet for the prehistoric past there is a peculiar difficulty in so doing because our knowledge of these affairs—of political history in the broadest sense—is entirely dependent on cultural remains. Thus there is a grave danger of confusing the expansion or migration of peoples with the spread of cultural traits, as though, in more recent times, we were to speak of a Gothic-architecture people or the migration from Europe of the railroad race.

In very early times when there were virtually no communications between different cultural centres, the danger of such confusions was much less than it would be today. Nevertheless the more we discover about the Stone Age the more apparent it becomes that at some times and places there was no correlation at all between culture and physical type. As the ability to exchange skills and ideas by language or demonstration is one of the most important abilities of our kind, this state of affairs cannot be surprising, but it has taken time to recognize its reality, and earlier assumptions of a close bond between species or race and culture are still being modified.

Though Lower Palaeolithic is essentially a cultural and not a chronological term,[1] it lasted in most parts of the world from the beginning of the Pleistocene to the end of the third, Riss, glaciation, a period of some half million years. During this vast span of years when man was advancing his skill as a tool-maker, and probably also his range as a social, emotional and thinking creature, in crucially important, but to our eyes painfully small degrees, the humanly occupied regions of the Old World can be divided, if somewhat roughly, into two principal cultural divisions. In Africa, round the eastern end of the Mediterranean up to the Black Sea, in southern and central India and intermittently in Europe men were gradually evolving the culture responsible for the first sharply distinctive standard tool form, the Abbevillian and Acheulian hand-axe (Fig. 4). In south-eastern Asia (Java, China, Burma and north-central India so far as present knowledge goes)

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*Pithecanthropus* and related stocks built up a different and generally less progressive culture which had no comparable creation to rival the hand-axe. This is known as the chopper-chopping-tool complex and shows a high proportion of tools made of rough flakes. A related cultural province extended through Europe as far as Britain[2] (Map III).

Europe and India were thus the areas of overlap where mingling and mutual influences were most likely to occur. In Europe, however, the picture is complicated by the fact that the bearers of the two cultural traditions were not usually present simultaneously, but alternated in response to the climatic pulse of Pleistocene times. Though there may well be many discoveries to disprove the universality of this rule, there is now very considerable evidence to show that during the Lower Palaeolithic period the hand-axe peoples extended northward through Europe with the warm interglacial conditions, while their rivals, perhaps dominated by the Palaeoanthropic stocks, probably hardier and more enduring, took possession of as much of the continent as was habitable during the glacial ages. It was only much later, during the last glaciation, that our own species had become sufficiently well equipped culturally, particularly through the possession of sewn skin clothes, to be able to master arctic conditions and so break this long alternation.

The map will make clear that these territories where the early history of mankind was played were only a small part, about one-fifth, of the land surfaces of our world. America, Australia and probably northern Asia and eastern Europe had not as yet been penetrated by our most varied and adaptable species but remained through hundreds of thousands of years inhabited only by man's fellow animals, those other creatures of evolution that had no such strange destiny as his in an unimagined future.

The oldest tools fashioned by human hands have been found in Africa. They are water-worn pebbles of lava, quartz and quartzite roughly chipped into blunt points or chopping edges. They have been recognized as belonging to two cultures, the Kafuan and the Oldowan, of which pride of place as the more ancient was given to the Kafuan. The first of these pebble types, usually flaked on one face only, were found in deposits dating back to the beginning of the Pleistocene period. In later phases of the Kafuan culture the pebbles were worked from both sides, the flake meeting to form the edge or point. It was thought possible that the early Kafuan was ancestral to the Oldowan.

Now, however, the reality of this culture, at any rate in its early phases, is being questioned. Perhaps the very rough flaking was made not by man but by natural agencies such as streams, waterfalls or soil-creep. One of the points against the artificiality of the Kafuan-worked pebbles is that in some places they occur in an enormous profusion which suggests the mass production of nature rather than the laborious handiwork of a few struggling hominids. For the present judgement of the Kafuan culture, as of that of

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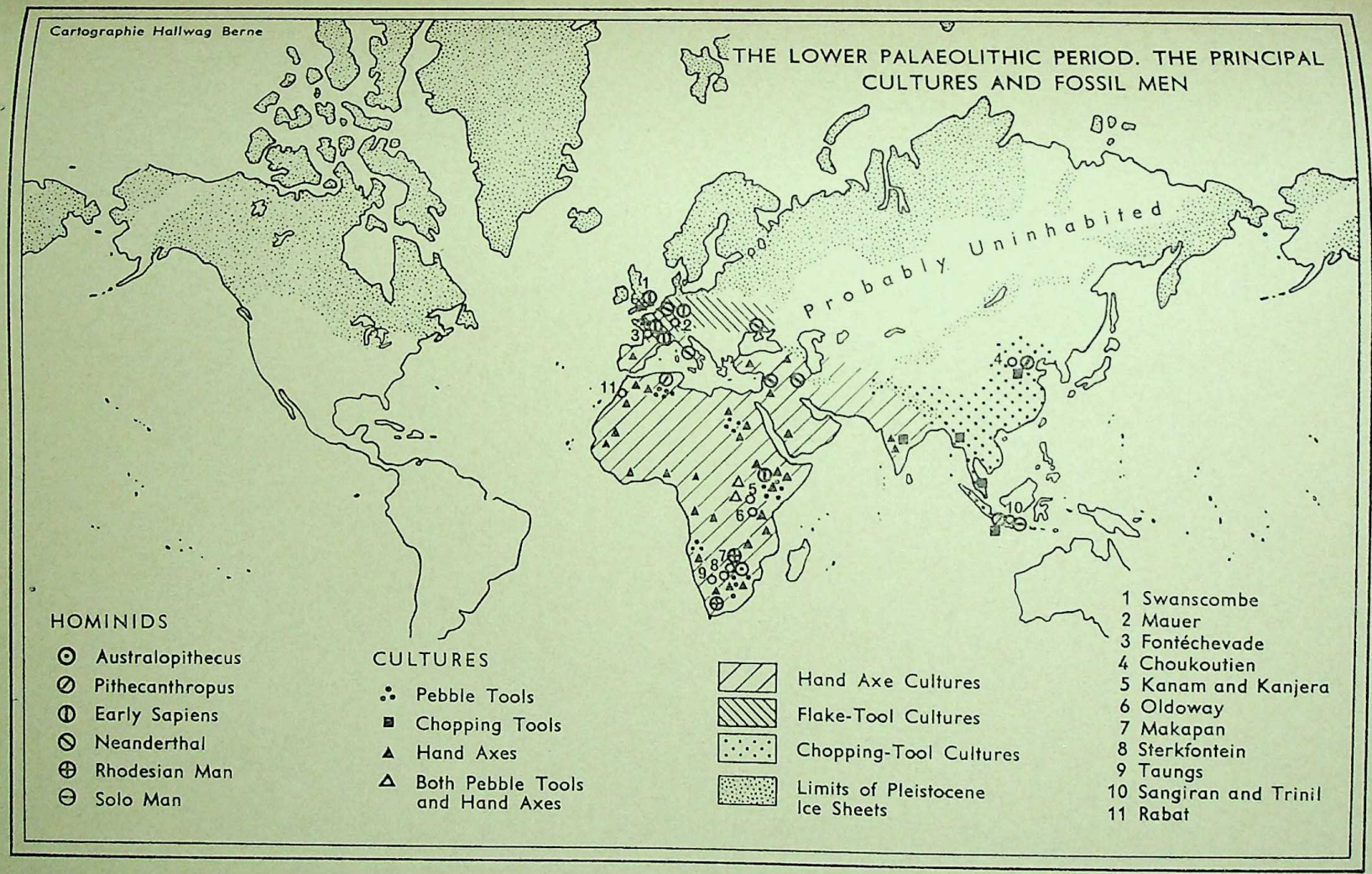


MAP III

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the 'eoliths' (below) will have to await further evidence. Probably it will be merged with the Oldowan.

Happily there is no doubt about the credentials of the Oldowan pebble culture. Although it has not as yet been identified in the earliest Pleistocene horizons, it occurs in a number of sites where it can be assigned to a later phase of the Lower Pleistocene and the early Middle period. Mention has already been made of the Oldowan level in the *Australopithecus* cave at Sterkfontein, and of the all-important '*Zinjanthropus*' horizon in the Oldoway Gorge itself. Other sites are Kanam in Kenya, the Vaal valley in South Africa, and Ain Hanech in Algeria, where the pebble industry was associated with artificially rounded balls that may have been used either for throwing or pounding. In the Oldoway Gorge there is evidence of how this, the oldest of human cultures, gradually progressed, for a series of superimposed deposits show the pebbles being shaped with increasing elaboration and clarity of purpose. By the latest Oldowan levels they are being chipped (though still roughly) from both sides into ovoid forms that can be recognized as prototypes of the Abbevillian hand-axes which occur in the overlying beds (Fig. 4). Thus the Oldoway Gorge is of great significance in showing beyond question that the Abbevillian culture and its immediate inheritor the Acheulian grew out of the ancient pebble cultures of the Oldowans.

Although early pebble tools have been found in so many parts of the African continent, the region where their makers are thought to have advanced to the full Abbevillian type of culture is in central Africa, perhaps in the open country on the forest fringes. On the other hand, when it is considered how uniformly the Abbevillian-Acheulian tradition developed over the whole far-flung region of its prevalence, it is not impossible that the ancestral pebble-tool cultures may have evolved towards the Abbevillian throughout the African continent.

Outside Africa there is no certain evidence for tool-making communities dating from the opening of the Pleistocene, but the claims of the European 'eoliths'[3] deserve serious consideration. Perhaps the best known are the English groups from East Anglia. These roughly chipped flints from old land surfaces smothered beneath the Crag deposits of Norfolk and Suffolk may well have been made by hominids who were the European contemporaries of the pebble-tool peoples of Africa. The fact that they were chipped by human hands and not by ice or other natural agents capable of exerting blows or pressures is not universally accepted. Even if none of the known 'eoliths' is an artifact (and this is unlikely), it still remains inherently probable that there were human creatures capable of rough tool-making present in Europe before, and in the south during, the first glaciation.

While Africa has already provided us with sure proof of the origin and slow maturing of the great southern cultural tradition of the hand-axe

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cultures, no comparable discoveries have been made for the Asiatic tradition of the chopper-tool makers. No tools made before the second glaciation (and therefore Early Pleistocene) have as yet been found in any part of Asia.

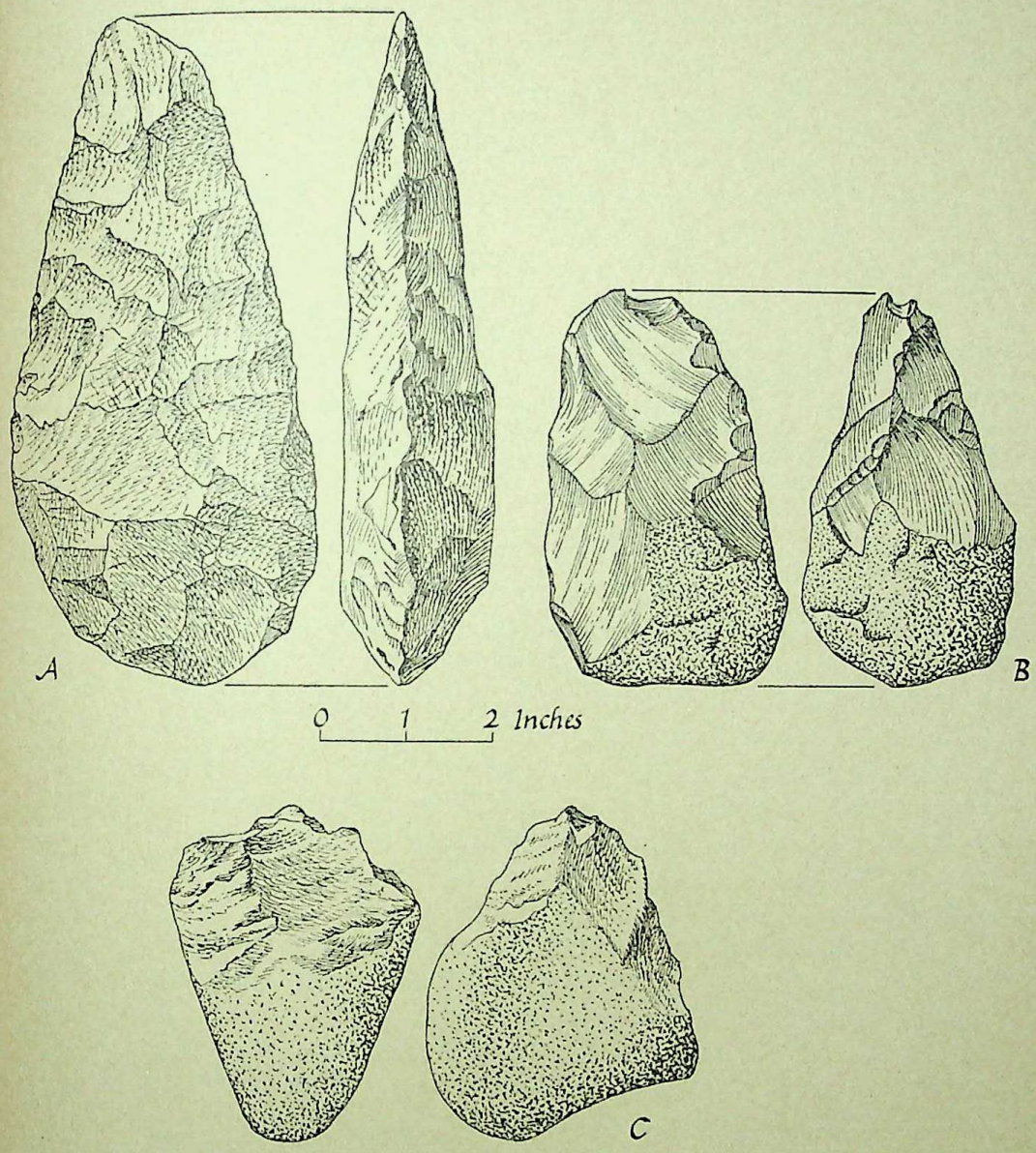


FIG. 4. Pebble tool to hand-axe: A: Acheulian tool; B: Abbevillian tool; C: Oldowan pebble tools (after Oakley).

No implements certainly made by *Pithecanthropus modjokertensis* and other hominids of the Djetis beds of Java have been identified; nevertheless, these men were there, and seem likely to have entered the continent already as tool-makers. When the tools of this stock are first recognized, in the Middle

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Pleistocene period (for example at Choukoutien), they are still of the most elementary workmanship; it seems likely enough that if their even rougher prototypes were found in ordinary deposits and not in a cave dwelling, their recognition would be quite as uncertain as that of the European 'eoliths'. The probability is that when the first hominids entered Asia from Africa, they took with them the practice of battering stones to get cutting-edges or rough points but that while the various precursors of *Homo sapiens* in Africa steadily improved this basic tradition into that of the bifacial pebble tools and ultimately hand-axes, the Pithecanthropic stock in much of Asia already showed the backwardness, the failure to develop much beyond this basic tradition, which remained characteristic of them throughout Pleistocene times.

Until the ice had melted after the Gunz glaciation then, the evidence for tool-making men outside Africa is tenuous and clouded, and we have to infer their presence in Europe and Asia rather from what followed than from any direct proof. With the first interglacial phase, however, the cultural map of the Old World begins to fill, and by the opening of the Middle Pleistocene with the second Ice Age the distribution pattern of the Lower Palaeolithic peoples had clearly emerged.

It has been seen how the Abbevillian culture had evolved from the primitive pebble traditions by the second glaciation, and during the warm interlude in this period its creators carried it into Europe. The Abbevillians spread as far as northern France (we, their descendants, have, indeed, named them after a village on the Somme) and southern England. As well as their still crudely shaped hand-axes, these ancient hunters of the early Middle Pleistocene may also have used stone balls as missiles, sometimes chipping them to make perfect spheres. There is as yet no certain trace of Abbevillians in India before the second interglacial phase, yet it seems likely enough that they did reach the southern part of the sub-continent almost or quite as soon as Europe.

With the later Middle Pleistocene the picture (or perhaps rather our knowledge of it) becomes rapidly more complicated. In eastern Asia where we have been supposing Palaeoanthropic men were making exceedingly crude and as yet unrecognized tools, we can now identify certain cultural groups. Our information is still very slight, but for the present three Asiatic centres have been recognized where tool-making had become sufficiently advanced by the time of the second glaciation for its products to be classifiable. One was in the Punjab where during this period men were flaking large and crude flakes of quartzite which have been recognized as the Punjab Flake Industry. The second is in northern Burma where hunters of the Irrawaddy valley were establishing the Anyathian culture, shaping several roughly defined types of chopper, chopping-tool, hand-axe and large scraper. The third place where human artifacts of the second Glacial Age have been found is Choukoutien, where a single tool of this antiquity is presumed to have been

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chipped by the immediate forerunners of *Pithecanthropus pekinensis* of the succeeding interglacial. Some authorities would still assign the Peking men to this earliest phase of the Middle Pleistocene, but it is now more generally held that they occupied the caves when the climate was again growing warmer. By the second interglacial we not only have their Choukoutienian culture established in north China, but also the Anyathian developing strongly in Burma, an important related culture, the Soan, appearing for the first time in those parts of India north and east of Abbevillian-Acheulian territory, and the Patjitanian in Java. In Japan a culture identified at Gongenyama appears to be the equivalent of these other cultures.

These were all cultures with implements made on both rough flakes and cores and particularly characterized by chopping-tools, choppers and clumsy scrapers (Fig. 5), all were extremely conservative, and all, presumably, the creation of *Pithecanthropi* and related Soan breeds. These chopping-tool cultures which prevailed in south and east Asia throughout most of the Pleistocene will be described before returning to Africa, Europe and south-west Asia where the events took place which led up to the dramatic developments of the Upper Palaeolithic.

If the far-flung but never very distinguished cultures of chopping-tool tradition are surveyed from west to east, the first to be encountered will be the Soan. This culture had been identified at many sites in the Punjab, most of them in the valley of the Soan or Sohan, a river which flows from the foothills of the Himalayas to join the Indus west of Rawalpindi. The makers of the Soan culture seem first to have peopled the region during the second interglacial period, and to have remained in possession throughout mid-Pleistocene times. Indeed, an evolved form of the culture was maintained even during the last Ice Age.

The Soans, during the two or three hundred thousand years at their disposal, succeeded in developing their tools, and doubtless all the other perishable things that came from their hands, rather more successfully than the other chopping-tool peoples we shall find to the south and east of them. This may have been in part due to the stimulating influence of their neighbours, the carriers of the Abbevillian-Acheulian tradition who also arrived on the scene during the Mindel-Riss interglacial. For here in the Punjab we are in the only region of full overlap between the hand-axe and chopping-tool traditions.

The most characteristic implements shaped by the Soans were chopping-tools and choppers made on large round, oval and flat pebbles; they also, however, struck and used flakes, and it is here that their technique improved most markedly with time. Both pebble and flake tools became progressively smaller and more accurately shaped, but the flakes also came to be struck from carefully prepared blocks of quartzite and trap, a mode known as the tortoise-core technique, regularly practised by the Levalloisians and other related cultural groups in western Eurasia and Africa (p. 148).



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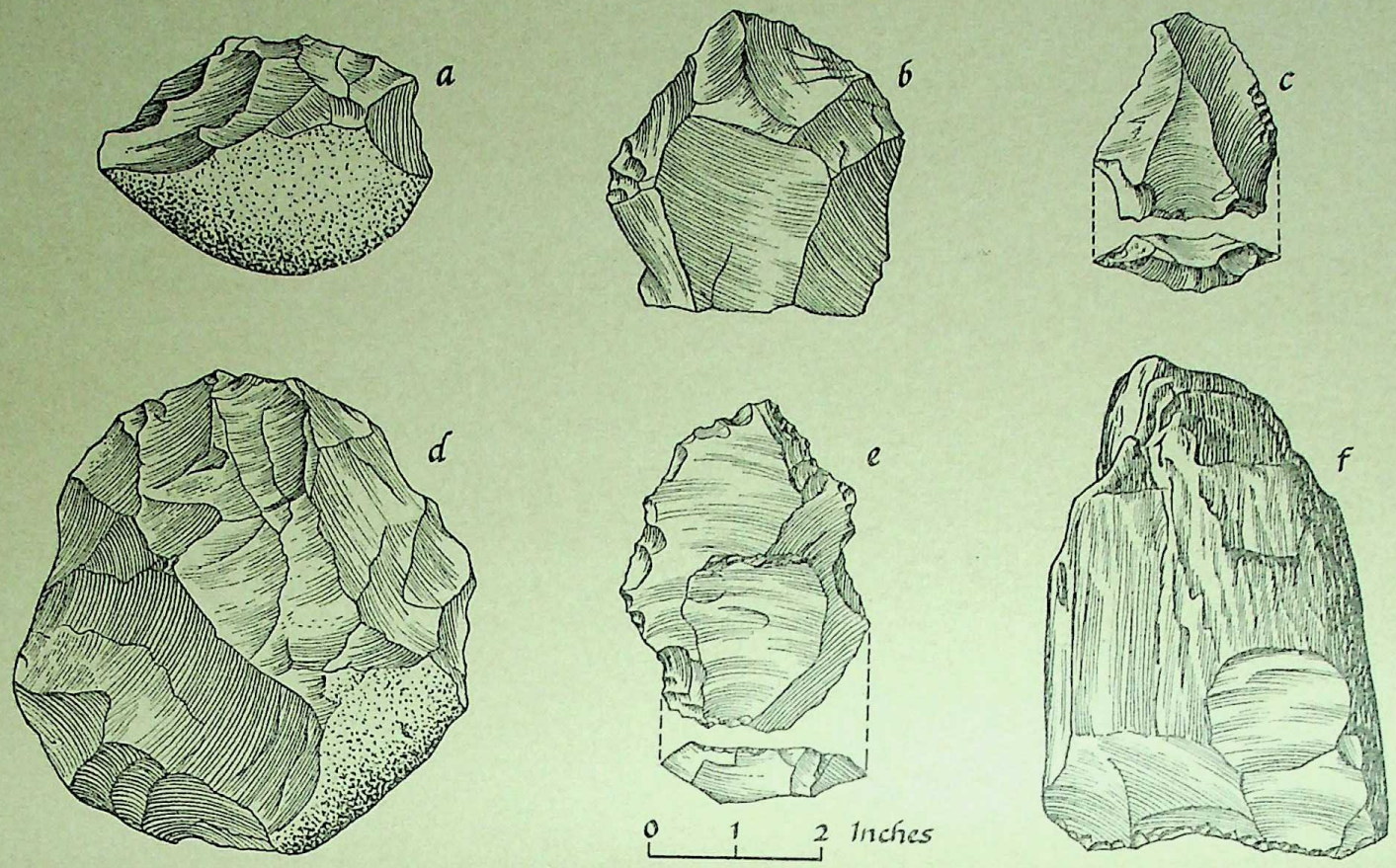


FIG. 5. Chopper-chopping-tool implements from Asia.

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The latest Soans, living during the Riss glaciation and the succeeding warm phase, possessed a culture which had approached very closely indeed to the European Levalloisian, a development which is not found among other chopping-tool cultures and which must surely be due to western influences.

The Anyathians who, as has been shown, were already living in the Irrawaddy valley during Mindel times (the second pluvial of their own region), used mainly fossil wood and siliceous tuff for their tools, the intractable nature of the first leading them to make a high proportion of the hand-adze type of chopping instrument. They maintained this simple tradition with only the slightest improvements in technique right through the Pleistocene Age; it is possible that new influences reached Burma towards the very end of the period, but certainly the manufacture of blade tools, so characteristic of the late Pleistocene, Upper Palaeolithic, cultures of Europe and Africa was unknown until after the end of Palaeolithic times.

In Java the Patjitanian culture, identified in the valley of the little stream Kali Baksoka and other sites on the south side of the island, has a large number of big rather clumsy tools, the chopper always predominating, made on water-worn pebbles, chunks of stone or massive flakes; it includes, however, a relatively small number of neat flake tools. It has been claimed that the Patjitanian, unlike all the other chopper-tool cultures of south-east and eastern Asia except the Tampanian of Malaya, included tools approaching so closely to hand-axes as to betray influence from the Abbevillian-Acheulian tradition. This seems unlikely, particularly in view of the absence of hand-axes in Burma, a region lying on the natural route from the nearest Abbevillian-Acheulian territories in India. These Javanese implements, which are at least as much choppers as hand-axes, were probably independently evolved to serve comparable purposes. The Patjitanian culture has not been found in direct association with *Pithecanthropus erectus* or with the contemporary fauna of the Trinil beds; at present it is only known to start a little later, in the second half of the second interglacial period, lasting on through the third glacial. There is little reason to doubt, however, that it was made by the immediate descendants of *Pithecanthropus erectus* or that this fossil man himself made a comparable, if perhaps even cruder, equipment of tools. His much later descendants of Late Pleistocene times (p. 48)—who may, as has been said, have been reinforced by invaders of a more evolved physical type—are held to have been the makers of implements found at several sites in the Solo valley; these include flakes and even blades struck from chalcedony and jasper as well as points and picks made from bone and antler. This material has been grouped together as the Ngandong culture, but for the present it has not been proved to be all of one age; nor can it, therefore, all be recognized as the handiwork of *Homo soloensis*.

The Palaeolithic history of Burma and Java has been first recounted because the information from these countries is greatest. There is no doubt

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that there was a Lower Palaeolithic population in Thailand (Siam) possessing chopper-tools and a cultural tradition similar to that of the Anyathian of Burma, while in Malaya men were making tools strikingly similar to those of the Patjitanians of Java, including even the hand-axe-like chopper. This Malayan Lower Palaeolithic culture has been tentatively named the Tampanian. There are a few traces of Lower Palaeolithic chopper-tool tradition more or less of the Patjitanian type in Sumatra and also in the Celebes. The Celebes, however, are more remarkable for an Upper Palaeolithic population in the Wallanae Valley who were making tools on small, thick flakes and occasional blades. This culture is likened to the Ngandong of Java and is found nowhere on the Asiatic mainland, although it is suspected to have been present in the Philippines. Its bearers may have reached the Celebes from Java and the Sunda Shelf route, but the Pleistocene fauna of these islands is entirely unlike that of Java and must almost certainly have come by the alternative route, also open in times of low ocean level, by Formosa and the Philippines. If this is true of the animals, then probably the hunters of the Late Pleistocene also came this way; it is a question which cannot be settled until the presence of peoples with cultural traditions similar to those of Ngandong and the Wallanae valley have been recognized on the mainland.

In southern China very little indeed is known of Palaeolithic man, although the skeleton from the Kwanshantse (p. 54) supposed to be of late Pleistocene Age, and a few tools suggestive of the chopping-tool type of culture picked up along the gorges of the Yangtze between Ichang and Chunking are enough to show that exploration would discover that this region had its Palaeolithic history. For the present such a history can be attempted only for north China. It centres in the Choukoutien caves, the most important site for the history of Palaeolithic man in the whole of Asia. After the occupation dating from the second glacial represented for us by a single implement, *Pithecanthropus* lived at the main site while fifty metres of cave deposit accumulated. During the whole of the great span of time represented there is practically no change in either the physical appearance or the material culture of the cave-dwellers. The *Pithecanthropi* continued to make their rough and inaccurate chopping-tools and scrapers, some on broken pebbles, some on flakes. Occasionally they utilized, though they can hardly be said to have shaped, implements of bone. These creatures who for so long inhabited the fissured limestone of the Western Hills less than thirty miles from the place where the exquisite city of Peking was to rise, were cannibals, eating human flesh, and more particularly human marrow and brains, for nourishment rather than ritual. They do not appear to have had any of the intimations of immortality which lead to a careful disposal of the dead. The fact that they existed for so long without perceptible evolution of their brains and with only the humblest improvement in the tools they made is held to prove that this part of Asia, so far from having

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contributed to the main tide of Palaeolithic history, was at this time a sluggish backwater.

In the fissure known as the Upper Cave at Choukoutien all this has changed. The men living there and burying their dead (p. 53) were of our own species, perhaps already showing some mongoloid features. Although the material found is scanty, they were in possession of an Upper Palaeolithic or even Mesolithic culture utilizing polished bone flakes, eyed bone needles and perforated bead head-dresses and necklaces. They also imported sea shells and mother of pearl for ornaments. They evidently used the cave as a seasonal squatting-place at a period which may have been very late glacial or post-glacial—perhaps as late as about 8000 BC.

A centre of vigorous Asiatic Upper Palaeolithic culture lay in the valley of the Huangho between Shensi and Shinsi and farther north on the Ordos plateau. Here in several sites dating from the last Ice Age, clearly earlier than the Upper Cave, hunters had maintained a culture which still showed some conservative inheritance from the chopper-tool tradition of the Choukoutienian and also included flake tools (points and scrapers) made from prepared cores, long blades, backed knives, engravers and many other types which will be found to be characteristic of the rapidly advancing Upper Palaeolithic cultures of Europe and Africa. This Ordos culture, which has sometimes been classified as 'Moustero-Aurignacian', has affinities with the Upper Palaeolithic of Siberia which will be discussed in connection with the first invasions of America.

The history of eastern and south-eastern Asia has been carried down to the end of the Pleistocene period because it was during the whole of that time a peripheral region remote from those parts of the world where man was to take the most significant steps towards higher cultural forms and at last to civilization. Also the chopping-tool tradition was so persistent that it gives a unity to the whole Palaeolithic period in these parts of Asia. This warrants treating it all together, even at the cost of encountering a few intrusive Upper Palaeolithic traits before discovering their origins farther west. It is time now to turn in that direction.

It has already been suggested that when the final phase of the second glaciation rendered northern Europe uninhabitable and most of the rest of the continent bitterly cold, the Abbevillian peoples withdrew southward towards their African cradleland. The peoples who took their place were the makers of a culture known as the Clactonian, which belongs to the group known as the flake cultures to distinguish them from the Asiatic chopper-tool and the African hand-axe traditions (Fig. 6). Their tools were mostly trimmed from boldly struck flakes, many of them evidently designed as skinning-knives and hide scrapers, an equipment better adapted to life in a cold climate than that associated with the hand-axe.[4] Although we know the Clactonians to have been fully established in western Europe near the beginning of the Mindel glaciation, while evidence for the existence of chopper cultures in Asia as

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early as this is still very scanty, it is probable that the European culture will prove to be an early offshoot from the Asiatic, perhaps sharing a common origin with the early Soan (p. 69). Thus, even if nothing is certainly known about the physical type of the early Clactonians, they may well have belonged to the same general Pithecanthropic stock. Furthermore, while later on contacts between the flake-tool and hand-axe makers in Eurasia undoubtedly led to the mingling and transference of cultural traits, there is good reason to believe that at this stage the two peoples were distinct and that we are free to visualize the departure of the Abbevillians and the arrival of the Clactonians as actual, even if very gradual, migrations.

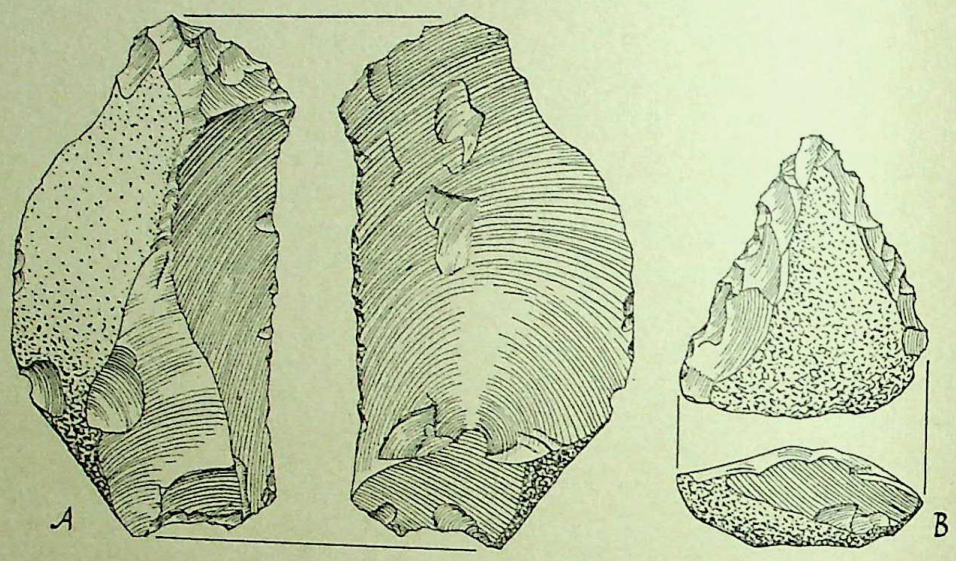


FIG. 6. Flake-tools from western Europe. A: Clactonian flake-tool (scale 4/9); B: Tayacian flake-tool (scale 2/5). (After Oakley.)

While the Clactonian hunters were holding their own in the harsh environment of England, France and Germany, the hand-axe peoples enjoyed an unbroken cultural development in Africa greatly improving their techniques and adding to the range of their tool forms (p. 77).

During the second interpluvial the more primitive Abbevillian stage of their culture had passed into the Acheulian with its increasingly finely made and beautifully proportioned implements. Possibly, too, by this time they had spread into India, where the early Madras culture, soon to dominate the whole peninsular area, certainly shows primitive, Abbevillian, forms of hand-axe.

With the melting of the ice for the corresponding long and very warm Mindel-Riss interglacial phase, the hand-axe people advanced once more into Europe, bearers now of the Acheulian culture. The hundred and fifty thousand years of this interglacial saw the heyday of this culture; to judge from the stone tools which alone survive of what may have been a rich if

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still technically primitive culture, this was the time when it reached its finest development as well as its greatest extent.

A place such as Ol Orgesailie in the Kenya Rift Valley with its lakeside camp sites thickly scattered with hand-axes, cleavers, bolas stones and the bones of wild pig, baboons and zebras, seems to speak of high success in the chase. As to its extent, the Acheulian culture covered much more than half the humanly inhabited world and about a fifth of the total land surfaces of our planet. Acheulian hand-axes, used to follow the steps of this culture like the shreds of a paper chase, have been discovered throughout Africa, south-western and western Europe as far as the southern half of England, across central and eastern Europe to the Black Sea, in Asia Minor, along the east end of the Mediterranean, in Arabia (though rarely as yet), Iraq, and all over peninsular India extending northward as far as the Punjab (p. 68). None has yet been found in Iran or Afghanistan, but the Acheulians must be presumed to have reached India by a narrow corridor north of the Persian Gulf and south of the Iranian highlands.

What is perhaps most remarkable about this vast Acheulian territory is the uniformity of its cultural products and the completeness with which new developments, clear-cut (if in our eyes trifling) improvements in manufacture, spread throughout large parts of three continents. If collectors went out from London, Jerusalem, Cape Town and Madras, all four might find hand-axes which could not be distinguished one from the other unless it was by the material from which they had been made. Evolution was, in fact, slow enough for diffusion always to keep up with it. From the Upper Palaeolithic onwards this state of affairs was generally to be reversed, cultural evolution within limited regions far outstripping cultural diffusion; thus it is not until the era of modern communications that we again encounter a comparable uniformity of manufactures over huge areas of human settlement. There remains, however, a need for caution in assuming the absolute contemporaneity of the various phases of the Abbevillian-Acheulian tradition in remote parts of their range. Rapid diffusion in certain directions, persistence in certain areas, may have led to a divergence of tens of thousands of years in the rates of change. Nor is it true that during this period of its expansion the hand-axe culture was everywhere the possession of one species of man.

Even in this time of its flowering during the second interglacial, remains of the actual possessors of the Acheulian culture are rare. In spite of the really vast quantities of hand-axes and other implements of this age which have been found in Africa, suggestive of considerable populations, the bones of their makers are few indeed. The earliest known are represented by the jaws of *Atlanthropus* from Algeria, while the doubtful Kanjera skulls, if their claims are accepted, also belong to this time and culture. In Europe Swanscombe man was certainly shaping hand-axes towards the end of this warm period. While the Kanjera and Swanscombe men have convinced

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many people that whatever happened during later times when cultural traditions were blending, the Acheulian of the second interglacial was the creation and possession of *Homo sapiens*, the Algerian *Atlanthropus* warns us against such over-simple assumptions. These fossils prove that the Acheulian tradition could be faithfully carried by men who physically had much in common with Heidelberg man, and the general Pithecanthropic stock.

In regions of western Europe where the bearers of the Acheulian and Clactonian cultures must have met during these scores of warm millennia, we have certain evidence of their contact and probable fraternization. A community, for example, living near High Lodge in Suffolk, England, towards the end of the interglacial, made both Clactonian flake tools and hand-axes, and it is impossible to know whether they were Acheulians who had been influenced by Clactonians or vice versa. What is certain is that here we have one of the earliest examples of a process which was to be commonplace in human affairs: the encounter of strange peoples proving a stimulus to change and leading to the creation of a new and fertile synthesis.

It may be that the most important development of late Middle Pleistocene times was the fruit of precisely this synthesis. The Levalloisian culture appears in Europe with the return of the ice for the Riss glaciation. This culture, distinguished by an ingenious and very effective way of making flake tools (p. 148), can be held like all the flake cultures to be particularly well adapted to the preoccupation with cutting meat and preparing hides that most often goes with living in cold or arctic conditions. It has been argued, therefore, that the Levalloisians were the former Acheulians who, sapient as they were, had borrowed ideas from their Clactonian neighbours to equip themselves to face a rapidly worsening climate. This view might be held to find some support from the existence at an earlier date in South Africa of a Levalloisoid method of flaking which was unquestionably devised by the local Acheulians. On the other hand the fact that the true European Levalloisians extended their territory farther to the north and east than the Acheulians had done, suggesting a hardy people capable of living in extreme cold, gives slight support to the opposite view that the Levalloisians were descended mainly from the old flake people, perhaps inspired by their Acheulian contacts. Certainly some Acheulians retreated southward before the advance of the ice, for there is evidence of their arrival in northern Africa.

Such dusty arguments must continue until more is known of this important but comparatively recently recognized culture. Unhappily even less is known of the peoples living to the east of the Levalloisians during and after Riss times who have now come very faintly into prehistory as the Tayacians. This culture centred in eastern and central Europe and extending from France to Palestine, appears to be a derivative of the Clactonian. It is chiefly important, as will be shown, as having apparently given rise to the culture of Neanderthal man. It would seem an obvious assumption, therefore, that the

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Tayacian flake culture should have been the product of men of Palaeoanthropic type, possibly of rather extreme representatives of the type. Yet in a cave at Fontéchevade in the Charente department of France, fragments of several skulls found in hearths belonging to the Tayacian culture were hardly if at all to be distinguished from *Homo sapiens*. As a warning against the exclusive association of particular cultural traditions with particular species, the Fontéchevade men are the counterpart of *Atlanthropus*. On the other hand it is not quite incredible that the skull fragments may represent a feast at which brutish Tayacians devoured several members of our own species—brawn having, for once, had victory over brain.

In spite of the enduring dominance of the native Abbevillian-Acheulian tradition in Africa, a culture comparable to the Clactonian was present in Kenya and the Rhodesias during the third pluvial period. This is the Hope Fountain culture which may have been derived from the Clactonian or Tayacian, in which case it would presumably have been carried into east Africa by immigrants from south-west Asia.

On the threshold of the Upper Pleistocene Age then, eastern Asia was still in the possession of the backward chopper-tool makers, Africa was mainly inhabited by Acheulians but also had the flake tool Hope Fountain peoples; south-west Asia was dominated by late Acheulians with Tayacian elements who extended also into Europe, while western Europe was occupied by the Levalloisians. If the end of the Middle Pleistocene period had seen a considerable mingling of peoples and their cultures leading to a complication of the cultural pattern of the Old World, this process was to be vastly increased and accelerated throughout the Upper Pleistocene. As for the physical nature of the human beings responsible for all these hunting cultures, there can be little doubt that while the eastern Asiatics were all of rather low, Palaeoanthropic breeds, in Eurasia and Africa there was a patchy mixture of types already nearer to modern man with a great variety of others showing more or fewer Palaeoanthropic features.

As warmer seasons returned after the Riss glaciation, the Levalloisians seem to have remained in Europe while the Acheulians returned, bringing the ultimate form of their culture which they had been evolving in Africa. While it may be folly to base such arguments on no more than stone implements, the scanty survivals of complex living cultures, it is nevertheless very tempting to see in the smaller, more finicky, aesthetically weaker hand-axes of the Upper Pleistocene a degeneration in the ancient Acheulian tradition extraordinarily similar in spirit to the decline which was to overtake so many cultural traditions during the future history of mankind. Is it legitimate to suppose that this, the very first human culture of some distinction, during the hundreds of thousands of years of its duration went through much the same cycle, the same rise and fall, that has been apparent, with rapidly increasing tempo, in all creative cultures of civilized man?

During the first half of the Riss-Würm interglacial late Acheulians and

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Levalloisians lived as neighbours in south-west Europe and have left ample evidence of their mutual influence upon one another. The last attenuated phase of the Acheulian culture, known as the Micoquian, shows in its flake tools as well as in the slight and pointed form of the hand-axes an effective borrowing of Levalloisian ideas. Similarly the Levalloisians of this period made hand-axes though employing their own peculiar techniques.

Just as the Riss-Würm interglacial phase saw what might be called a fragmentation of the ancient hand-axe tradition, so also did the corresponding Kanjeran-Kamassian interpluvial of Africa. The very old and distinctive version of the hand-axe tradition characteristic of South Africa (where it is sometimes distinguished as the Stellenbosch culture) seems to have been the parent of two of the principal later African cultures. These are the Sangoan of South and Central Africa and the widespread Fauresmith of British East Africa, the Rhodesias and South Africa. The northern swing of the rainbelts which at this time was desiccating much of the continent, made the peoples concerned seek out large rivers and lakes or highlands lofty enough to maintain falls of rain and snow. Thus the Sangoans frequented the Zambesi and the Congo, Lake Victoria and the other Great Central Lakes, while the Fauresmith people similarly kept nearer permanent rivers in the south, and lived at high altitudes on Mount Kenya, the Aberdares, Kilimanjaro and other ranges in the eastern part of their territory. In the south the Fauresmith culture was maintained into the last, Gamblian, pluvial period.

In addition to these two offshoots from the native Acheulian, the Levallois culture is generally (though not universally) held to have been brought into Africa from Eurasia, perhaps more immediately from Palestine. Except for an uncertain settlement on the north-west coast, the Levalloisians spread out only in the north-east sector of the continent: in Egypt (as far west as the Kharga oasis), Abyssinia and British East Africa as far south as central Tanganyika.

With the latter half of the last interglacial phase we come to a people who provide something approaching a substantial raft on the uncertain waters of our Palaeolithic history. These are the Neanderthalers and their Mousterian culture (Fig. 7), already established in this time of warm climate even if their heyday was not reached until the Würm glaciation was at its first climax. The very numerous skeletons of this breed that have been unearthed in Europe, Asia and north Africa have always (if they had tools with them at all) been associated with a culture with a strong Mousterian element, even where the Levallois technique and the manufacture of hand-axes (by means other than those used by the Acheulians) show the influence of other traditions. The Mousterian and related flake cultures dating from the end of the last interglacial and the earlier part of the last glacial phase are sometimes described as 'Middle Palaeolithic'.

It has already been suggested that the Mousterian was a development out of the Clactonian or Tayacian which took place in eastern Europe or adjacent

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regions. Certainly this lies near the centre of its range. The true Mousterian has not been detected in Britain, but it is probable that Neanderthal man did in fact reach so far to the west, for at Creswell Crags in Derbyshire cave-dwellers left tools showing a Mousterian tradition while at Kent's Cavern, Devonshire, was a Mousterian with Acheuleo–Levalloisian influence very much like the culture associated with actual Neanderthal remains across the Channel in the island of Jersey.

From this western limit Neanderthal man with his culture pure or adulterated has been found through most parts of Europe, in south-west Asia and in north Africa. An extreme north-eastern outpost has been discovered in Uzbekistan, where a cave not far south of Samarkand contained Mousterian

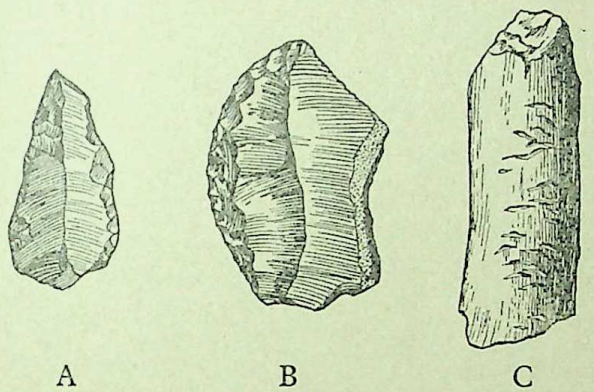


FIG. 7. Mousterian implements; A: flake point; B: side scraper; C: bone compressor (scale approx. 4/5). (After Singer.)

implements and the skeleton of a young Neanderthal child who had been buried within a ring of horns of the Siberian mountain goat. Another man of the eastern outposts has been found in Azerbaijan, again with a Mousterian element in the associated culture. A skull of a Neanderthaloid infant has been excavated from the Shanidar cave in northern Iraq.

It has already been shown that the earlier Neanderthalers, those fortunate enough to be born before the advance of the Würm glaciation, were rather less extreme in physical type than those who faced the rigours of this last glaciation. They lived generally in the open, like the Acheulians, whereas their descendants were by choice cave-dwellers. Examples of Neanderthal man from this earlier period have been found over most parts of their total range; one who was alive at the very beginning of the interglacial comes from north Africa (Rabat, Morocco), while two groups of European Neanderthalers fall well within the warm period—those from Germany (Ehringsdorf) and Croatia (Krapina); an individual from Italy was living towards its end. South-west Asia is represented by Palestine, where the Tabun and Skhul men were hunting on Mount Carmel just before the cold began.

Undoubtedly then, the Neanderthal breed had spread far before Würm

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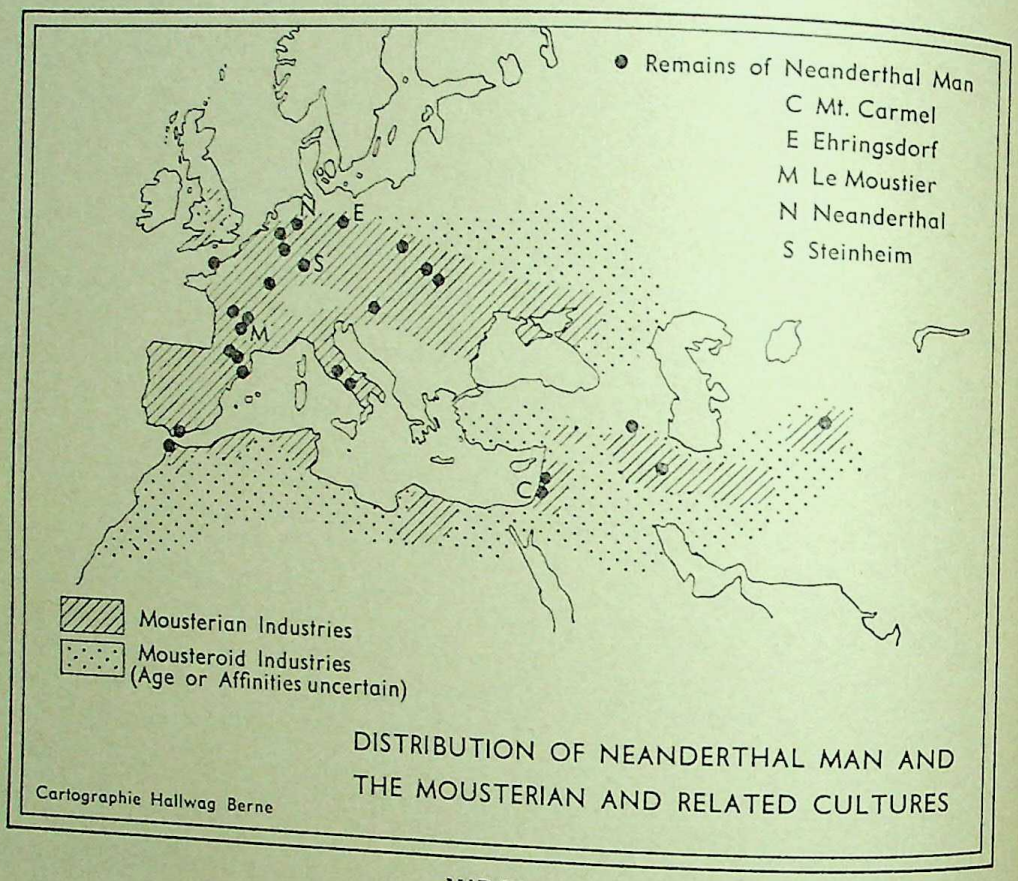
times, but it was during the glaciation that they appear to have asserted their domination. In western Europe in particular they were evidently numerous and strongly entrenched (Map IV). Some seventy thousand years ago very many cave-dwellings and shelters throughout the region must have been occupied by these uncouth but successful hunters. They were now at their greatest strength as a species and their extreme of bodily development (p. 46).




MAP IV

Between forty and fifty thousand years ago, during the first half of the final glaciation, there was a sudden change in this situation. Sudden at least in the terms of the coarse net cast by our prehistory which still lets millennia slip back into the sea of time. It was a change that must have taken much longer than the time which has passed since the first glimmers of civilization, yet it was swift in terms of what had gone before. Throughout the whole of their range in Africa and Eurasia the Neanderthal species disappeared. The survival of remnants of Palaeoanthropic type in Africa has been recorded (p. 48), and there is every likelihood that comparable human relics will be forthcoming from Asia. In general, however, it can be said that, starting

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with Europe and west Asia, the entire Old World was emptied of all other groups and *Homo sapiens* left in possession.

By what means the Palaeoanthropic men in all their variety were liquidated can never be known. It is easy, and doubtless partially true, to say that they were defeated by the superior intelligence, better weapons and organization of our own species. Yet sometimes, when thinking of the vast stretches of the earth's crust involved, and the many remote, unwanted corners where they could have survived, one feels that there is more of the *Zeitgeist* in it than this. As with the dinosaurs, so with these men, was there not something more than the environment and their enemies against them? Furthermore, while all proper weight has by now been given to the recent tendency to separate physical type and culture in the Palaeolithic age and to emphasize the variability of our ancestors, the impossibility of isolating a pure *Homo sapiens* stock far back into the Pleistocene, yet surely this final scene says something for the opposite point of view? In Europe, at least, the picture is fairly clear. An apelike breed in possession of one well-defined cultural tradition was directly confronted and dispossessed by men of modern type and with a totally different material culture. Two breeds, we think two species, met face to face and their faces were strikingly unalike. However much mixed cultural and physical traits had been in the past, in the early Upper Pleistocene there was some centre or centres where men entirely of our own kind had created the beginning of the high hunting cultures of the Upper Palaeolithic, a tradition almost wholly new, remarkably inventive, and, as history was to prove, immensely potent for future growth.

This first crystallization of the blade cultures of the Upper Palaeolithic (p. 169) was one of the crucially important events in human affairs: it is not certainly known where it took place, but recent evidence, as we shall see, points to west Asia. What is perfectly clear is that the whole Upper Palaeolithic movement, if it may be so called, all the important events of a revolutionary age, took place on a limited stage. That stage was Eurasia from France to the south Russian plains and Persia. In Lower and Middle Palaeolithic times eastern Asia had been a backwater remote from centres of creative change; now Africa, too, lapsed into this position. The huge continent which may have seen the origin both of human kind and of *Homo sapiens*[5] and which, in part, was to have so important a place in the first flowering of civilization, made no significant contribution to the stirring achievements of the last glaciation.

Just because it was a revolutionary period marked by the first great acceleration in technological progress as well as the first known expression of man's imaginative power, the historical pattern of the Upper Palaeolithic is much more complicated than anything existing before. Evolution now rapidly overtook diffusion, and it was no longer possible that there should be such far-flung uniformity as that shown by the Acheulian culture. Man became physically more uniform, culturally far more diverse. Throughout

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the Eurasian theatre the all-conquering *Homo sapiens* split into a number of groups, all in possession of the new blade tradition, but otherwise sharply differentiated, as were those other groups that, towards the end of the period, began to carry late forms of blade culture to the wide territories outside their homelands. Even more than in earlier times, our knowledge of the Upper Palaeolithic is so overwhelmingly much greater for Europe, and particularly for western Europe than for the rest of the primary area, that it is difficult to see the whole prospect in due balance. There is a score of European sites for every one in Asia. Furthermore, western Europe's possession of man's first great artistic creations justifies giving it a peculiar pre-eminence. Nevertheless, in spite of the richness and complexity of the European Upper Palaeolithic, it appears almost certain that the blade tradition did not originate there. The picture given by the great series of classic cultures of the French caves is rather that they were brought in when already more or less fully developed, even though later new groups evolved locally. Europe can show no transitional cultures suggesting the evolution of either the latest Acheulian or the Levalloisio-Mousterian tradition towards the earliest known blade culture, the Châtelperronian.[6] Rather, as has been said, it was brought in by modern man and superseded the Neanderthal's Mousterian with a sharp break.

In south-west Asia, on the other hand, there are signs of an elementary type of blade culture emerging at an earlier date. At Adlun on the coast of the Lebanon a 'pre-Aurignacian' culture of this kind has been found in a geological context which dates it to the last interglacial phase and which can be shown to be *earlier* than the Levalloisio-Mousterian found with the famous Mount Carmel skeletons which showed characteristics both of Neanderthal man and of *Homo sapiens*. This Carmel industry was itself already recognized to contain burins and other blade culture elements not found with the typical Levallois and Mousterian of Europe. It looks very much, then, as though the blade and burin tradition of the Upper Palaeolithic evolved in western Asia, perhaps in the hinterland rather than on the Mediterranean coast, and that it was from there that it spread westward into Europe (as later the Neolithic tradition was to do). The admixture both of racial types and of cultural traditions at Mount Carmel encourages the already likely assumption that this earliest blade and burin development was due to men of *Homo sapiens* stock who came to mingle both their genes and their new ideas for tool-making with that of the Neanderthalers. Their final ascendancy in the same area is demonstrated in a true blade and burin culture known as the Emiran which succeeded the Levallois Mousterian at Mount Carmel—though not without in its turn incorporating certain Levallois forms.

Thus it seems as though the lands beyond the eastern end of the Mediterranean which were to see the dawn of the Neolithic revolution also played a great part in the earlier and almost equally important cultural innovations of the Upper Palaeolithic. It is here that we should look for the cradleland

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of the Châtelperronians who dispossessed Neanderthal man in western Europe. It still remains possible, however, that the true Aurignacian which followed the Châtelperronian originated rather farther west, conceivably in eastern Europe. However, it would be rash to assume that any of these ideas about the birth of the Upper Palaeolithic tradition are final. Every year brings new and contrary ideas about these most crucial events in the history of our kind.

In France where so many scores of rich sites have been excavated the local sequence of cultures is much more certain, and although further research may well complicate, it is not likely to contradict, what is already known (Fig. 8). Having exposed our present doubts about the origins of the Upper Palaeolithic movement, it will give the most coherent idea of its course if it is described from a viewpoint looking outward from the limestone country of south-west France and northern Spain, where the remains of the gifted hunters concerned are so strongly concentrated. It has been made clear that the earliest of these cultures, the Châtelperronian, which in France is associated with the Combe Capelle race (p. 52) can be detected over most of the Eurasiatic theatre but not in a perfectly consistent form. It was flourishing towards the close of the first phase of the Würm glaciation. The second, Aurignacian culture is almost equally widespread, but shows so coherent an individuality throughout its whole extent that there can be little doubt that here we are dealing with a single migrating race. That race was of the powerful, large-brained Cromagnon type, skilful and artistically gifted; its spread was made easier by the more favourable climate intervening between the first and second maxima of the glaciation. No doubt it was this improvement which encouraged this people to push into Britain where the Châtelperronian culture failed to penetrate. Although the Aurignacians extended eastward into south-west Asia, they are poorly represented in what is usually recognized as the gateway into Asia—the Balkan countries of eastern Europe. It is possible, therefore, that their migrations did not take them by this expected route but rather along the Pontic steppes and then southward into the Lebanon and Palestine (Map V).

The third culture recognized in France is the Gravettian, sharply distinct from the Aurignacian and probably representing a further development of the Châtelperronian tradition. This continuity suggested by their handiwork is also supported by the physical type of the men concerned, for the Gravettian race, represented best at Predmost in Czechoslovakia (Moravia), is very much like that of Combe Capelle. Whether this development took place in many areas of the original Châtelperronian range, including France itself, is uncertain. It seems more probable that it was initiated in southern Russia. Here an eastern branch of the Gravettian flourished exceedingly among mammoth hunters who pursued their game along the corridor of tree-scattered steppes lying between the northern ice-sheet and the heavily glaciated ranges of the Carpathians and Alps. Some element of their

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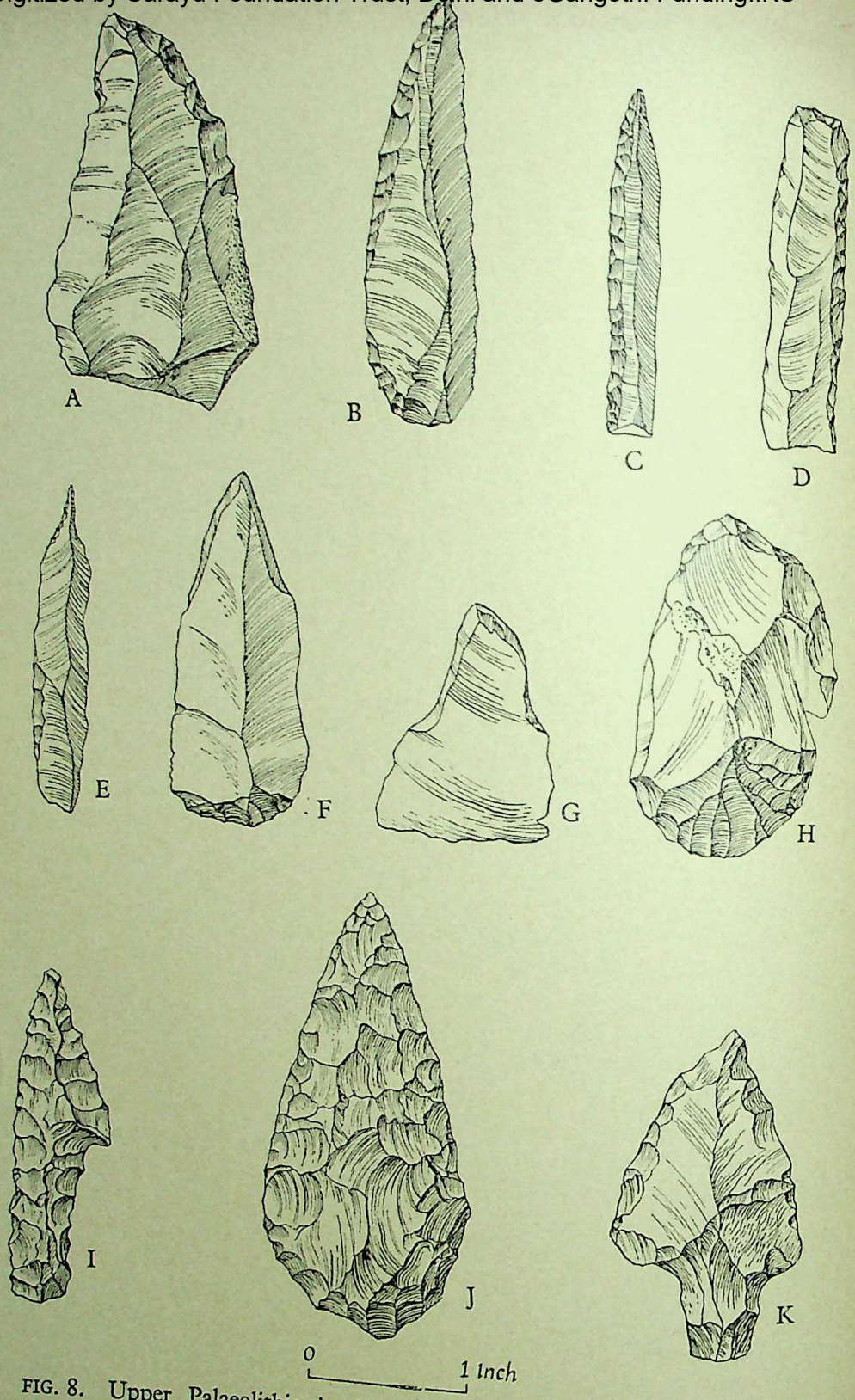


FIG. 8. Upper Palaeolithic implements from Europe. A: Audi knife blade; B: Châtelperron knife blade; C: pointed Gravette knife blade; D: square-ended Gravette blade; E: awl; F: graver and end scraper; G: Aurignacian beaked graver with notch; H: Aurignacian keeled scraper; I: single-shouldered Solutrean point; J: Solutrean laurel-leaf point; K: Aterian point (after Burkitt).

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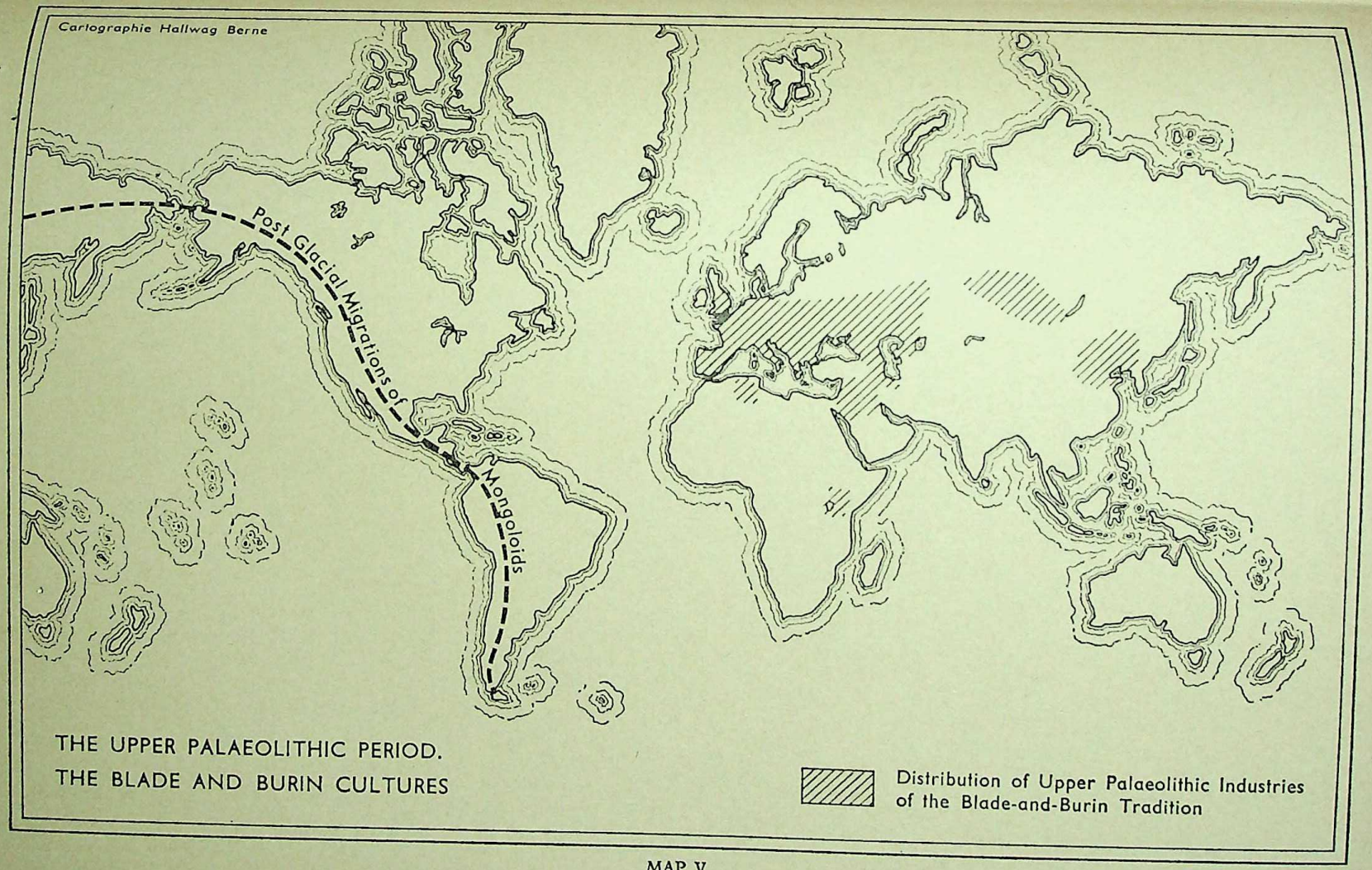


MAP V

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traditions was even carried as far to the east as Siberia, for the mammoth hunters of Mal'ta (near Irkutsk) as well as having blade forms among their tools were like the Gravettians in carving little female statuettes in bone (p. 198). It has already been suggested (p. 73) that the Ordos culture of China also embodied something of the Upper Palaeolithic blade tradition.

It is surprising to find that in spite of the harsh conditions prevailing in the second maximum of the Würm glaciation and even on into the slight recession that followed, makers of the Gravettian culture succeeded in establishing themselves as far into the bleak north-west as Derbyshire in northern England. They remained there until the end of the Ice Age, evolving a local culture known as the Creswellian.

The next event in the cultural history of France seems to have been brief and episodic. The Gravettian was there locally succeeded by the Solutrean culture, distinguished from other Upper Palaeolithic blade cultures by exquisite flint lance or dagger blades showing a highly skilled form of pressure flaking (p. 151). Similar blades are known from Hungary and Bulgaria, and central Europe was once thought to have been the homeland of the Solutreans;[7] recently counter-claims have been put forward for a southerly origin in Spain and even north Africa. In fact it is possible that the Solutrean culture does not everywhere signify any movement of people but rather the adoption by existing populations of the new pressure-flaking technique. Where Solutrean blades appear only sporadically, as in England, it can be supposed that these fine products may have travelled from hand to hand as objects of trade.

The savage cold against which the European peoples had to struggle as the Würm glaciation reached a final climax seems to have checked both migration and the spread of ideas, for during this last stage of the Upper Palaeolithic period there was a tendency for cultures to be developed locally and remain in isolation. It has already been mentioned that such a local growth, the Creswellian, managed to survive in the north of England and we find similar offshoots in France and other parts of Europe. They sprang from a mixed ancestry of the older cultural traditions in which the Gravettian was generally dominant. By far the most remarkable among these cultures was the Magdalenian which flourished exceedingly in its homelands in south-west France and northern Spain but also made its influence felt in Belgium, Switzerland, southern Germany and Bohemia.

It was these Magdalenian hunters, finding living easy with the abundant game of the open grassland and tundra of their day, who brought cave-painting, engraving and carving to a superb peak of achievement before its sudden eclipse together with the way of life on which it depended (p. 25). In their art all the Upper Palaeolithic peoples give us the first opportunity in history to enter into communion, however imperfectly, with the mind, imagination and emotions of our forebears. Looking at these studies of the mighty mammoth and rhinoceros, the great oxen and reindeer and bison,

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the graceful herds of stag and wild horses, each of us can experience according to his imaginative powers something of what it was like to live as a hunter at that time some twelve thousand years ago, when civilization was still hidden from knowledge far in the future, but when self-consciousness and the power to grasp all kinds of mental images was rapidly transforming the human psyche. This art also reminds us, more effectively than any consideration of the similarities which underlie the diversity of the blade cultures, of the unity of all the Upper Palaeolithic peoples, particularly in western Europe. Soon after the arrival of the first blade culture, the artists had been at work and had maintained a tradition, variable certainly, but continuous enough to imply the handing on of ideas and technical methods from one culture to the next.

At this point in the ultimate Palaeolithic it becomes necessary to look once more at Africa, where bearers of blade cultures were at last to make an appearance. Throughout the greater part of the Gamblian pluvial period (corresponding to the Würm glaciation) the peoples of that continent were content to continue in the Acheulian and Levalloisian traditions, allowing the progressive movement of world history to pass them by to the north. In east Africa the Stillbay culture (Fig. 9) was a moderately vigorous development from the Levalloisian while the Magosian was a still later degeneration from the same root. Both Stillbay and Magosian cultures extended also into the Rhodesias and made themselves felt even in South Africa, but in the south the ancient Acheulian inheritance was still dominant among the possessors of the Fauresmith culture. In central Africa the Sangoans proved themselves equally conservative. In Egypt, as in east Africa, it was again the Levalloisian tradition that lingered alike in the Sebilian of Upper Egypt, in the miserable epi-Levalloisian of Lower Egypt, and the Khargan centred on the Kharga oasis. In north Africa the picture is different and somewhat more vigorous. The Aterian culture, which seems to have originated in the north-western end of the coastal strip and to have spread from thence eastward, suggests a people of some creative energy. It is thought to have grown from the local Mousterian, but its possessors were skilful workers in flint, using, among others, the pressure-flaking technique which has led to a belief that the Aterians may have had some share in the Solutrean culture of Europe (p. 86). They have also been credited with being the inventors of the bow and arrow. Their expansion carried them as far as the Kharga oasis which they (or their cultural influence) reached at the very end of the Palaeolithic Age; some may have crossed into Spain at an earlier date. It was here in the north that the true blade tradition of the Upper Palaeolithic made its tardy appearance in Africa. The earliest of these is now held to be, not the Capsian as was long thought, but the Dabba culture, known at this relatively early period in Cyrenaica and believed to have been introduced by an influx of people from the east end of the Mediterranean. It is a culture with typical backed blades and burins belonging to the main European and south-west Asiatic tradition

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and only later developing some local characteristics. The next event appears to have been the beginning of the Oranian culture along the coasts north of the Atlas chain in the regions known as the Maghreb. This culture, which is characterized by a great preponderance of small backed blades, may have

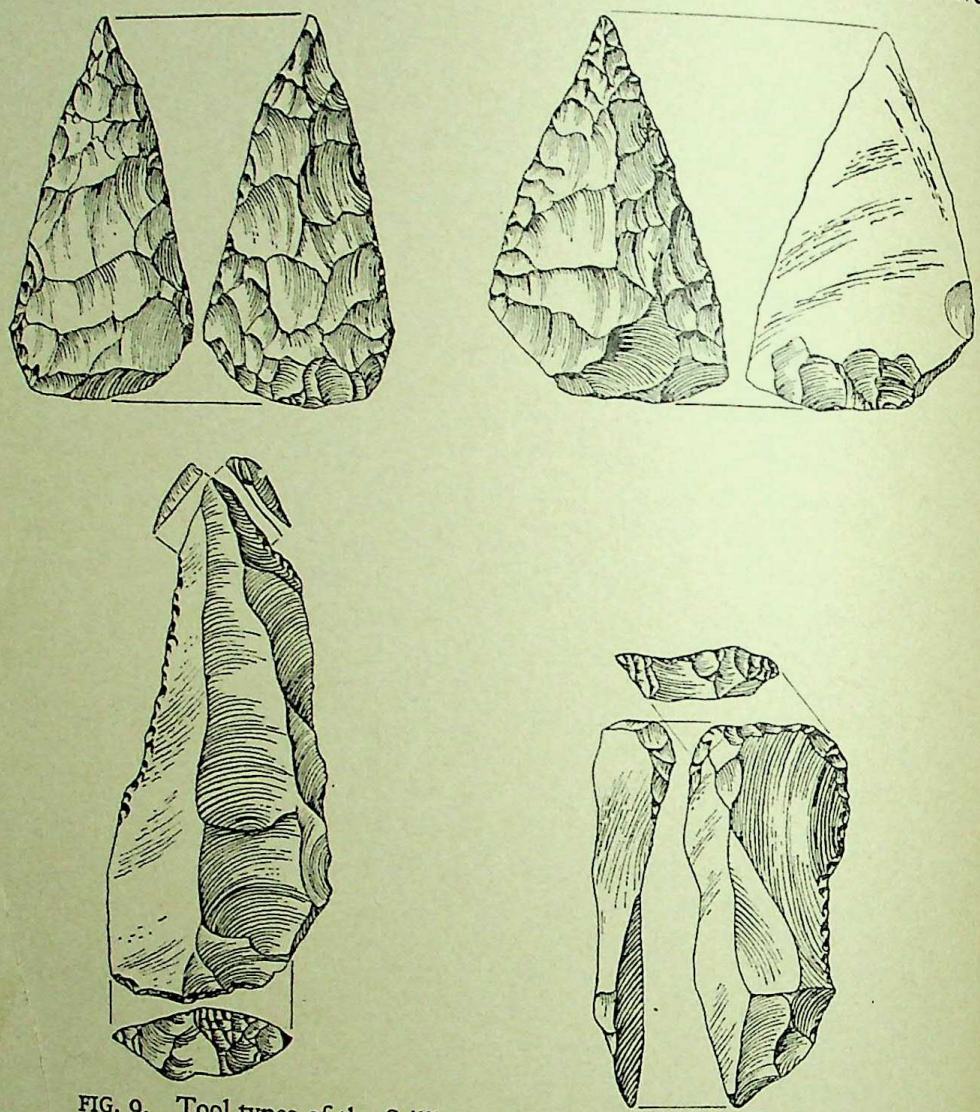

FIG. 9. Tool types of the Stillbay culture from Ethiopia. Scale 2/3 (after Leakey).

been due either to a migration from Spain, or an influence from the late Palaeolithic cultures there, dating from something like 15,000 to 12,000 B C. By about 10,000 B C, or rather later, it is suggested that the people of the Dabba culture living along the southern, desert-facing slopes of the Atlas in Algeria and Tunisia, created the Capsian culture. In its earliest form the Capsian included fairly large curved backed blades so much like the Châtelperronian of western Europe that it led to the old belief that this was a very

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early African blade culture. However, it is now known that from the first it also included small forms approaching the microlithic, and that in its late phase when it was spreading north and east along the coast it had all the true microlithic implements of the European Mesolithic. There seems no

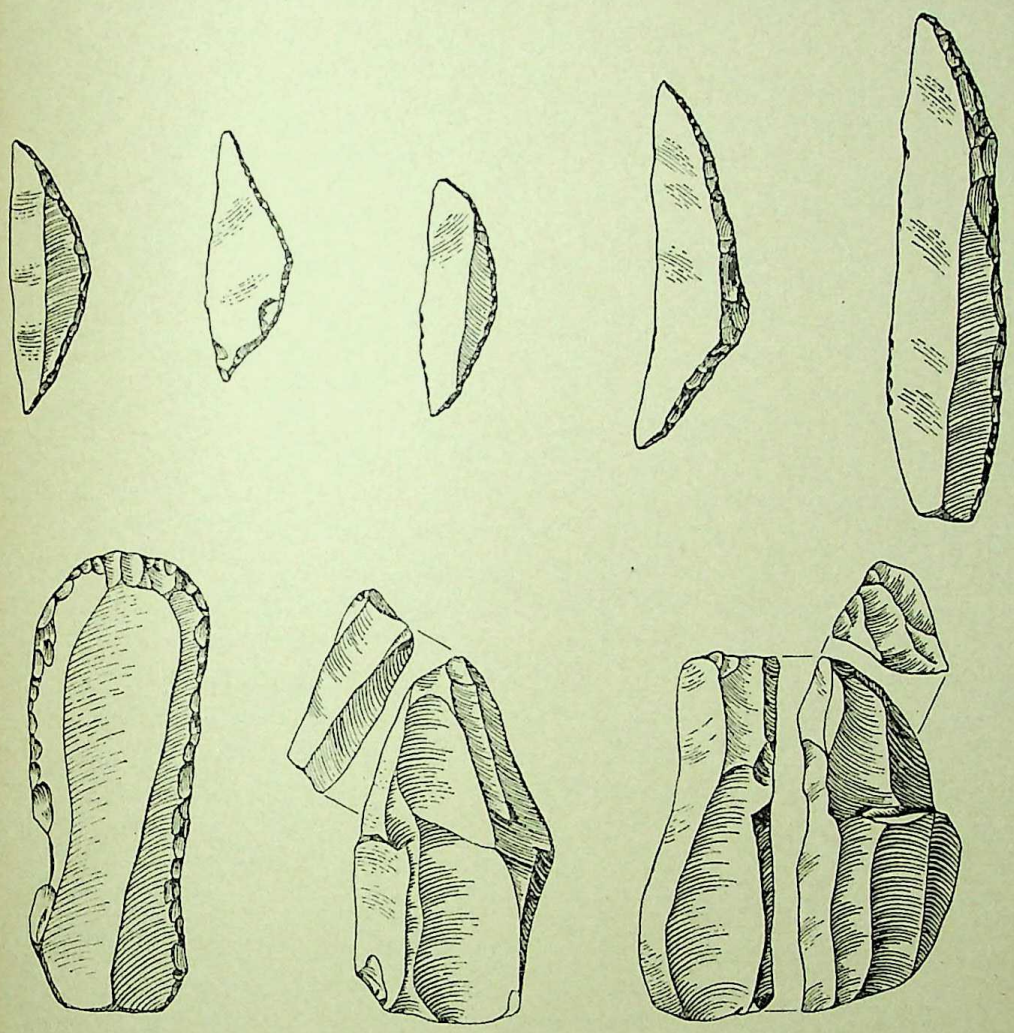

FIG. 10. Tools of the Upper Kenya Capsian (after Leakey).

doubt that this Upper Capsian was a post-glacial Mesolithic culture. The only Carbon-14 date yet obtained gives about 6800 B C for the end of the earlier or Typical Capsian (Fig. 10).

A very interesting point for the racial history of north Africa (and one which also supports the historical interpretation just given) is that while the Oranian culture is associated at a considerable number of sites with a massively muscled, rather heavy-browed type reminiscent of Cromagnon man, the Capsian seems to have been created by people of smaller, more

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delicately featured physique comparable to the Natufians and evidently early representatives of the Mediterranean race soon to dominate the region. A survival of the Oranian type may perhaps be recognized in the Guanches of the Canary Islands.

This reconstruction of the spread of Upper Palaeolithic cultures into north Africa and the emergence of Mesolithic cultures there is by no means universally accepted, though it seems to offer the best interpretation of all the known facts. Some would still insist on a much earlier beginning for the Capsian. Some, too, still attribute the lively rock shelter art of east Spain (Fig. 28) to a Capsian invasion of the peninsula. Even if, as seems probable, the east Spanish art was not the work of Capsians, it is thought that much of it was painted at a time when the Capsian was flourishing on the other side of the Mediterranean and may well have had some kind of relationship with the rock art of the Sahara.

This African rock art—nearly all of it incised but with a few rare paintings—is found along the southern side of the Atlas but also southward in the Hoggar mountains and scattered eastward in southern Tripolitania, in the Tibesti massif, Gilf Kebir and even as far as the Nubian Nile. It includes some fine examples of the naturalistic portraiture of wild animals, especially elephants, giraffes, lions and an extinct giant buffalo. These wild animal studies, often life size, are probably the oldest work, just as various groups showing domestic animals and others with obvious connection with historical Egyptian motifs are undoubtedly among the latest. Possibly much of this earlier art was engraved by peoples of Capsian descent who were just beginning to adopt some of the Neolithic cultural traits spreading out from the Nile valley. The Capsians themselves sometimes made very rough engravings, usually only a pattern of lines (in one known instance possibly attempting representation) but it seems unlikely that left to themselves they would have developed this excellent representational talent. On the other hand, Egypt does not seem to be a credible source of inspiration for what was essentially a hunters' art. Perhaps some indirect inheritance or influence from the European Upper Palaeolithic tradition may lie behind these rock carvings of the desert fringes. Among other African cultures that have been mentioned, several, notably the Sebilian and Magosian, developed a microlithic element in their latest phases, while the Kenya Capsian gave rise to the Elementeitan of east Africa, a true Mesolithic culture dating from post-glacial times. In South Africa the Smithfield and Wilton (Fig. 11) cultures were the counterpart to the Elementeitan, but were still in full swing in recent times when the first white settlers arrived. Here, in fact, is one of the first and best-documented examples of the cultural persistence which has allowed peoples living the hunting and food-gathering life of the Stone Age to survive into our modern world. Looking at the flints and other remains of the Wilton peoples who began to pile up their great seaside shell middens at a time when civilization and even farming were unknown throughout the

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world, suddenly we find them mingling with the copper wire and beads of European traders.

These South African developments are among the outer ripples set up by the changes of the Mesolithic Age; before turning to see what happened nearer the centre, it is necessary to follow another late and peripheral movement of Upper Palaeolithic culture. This is the occupation of America from eastern Asia by peoples who may have had a primitive Caucasian element among them but who undoubtedly in time became predominantly

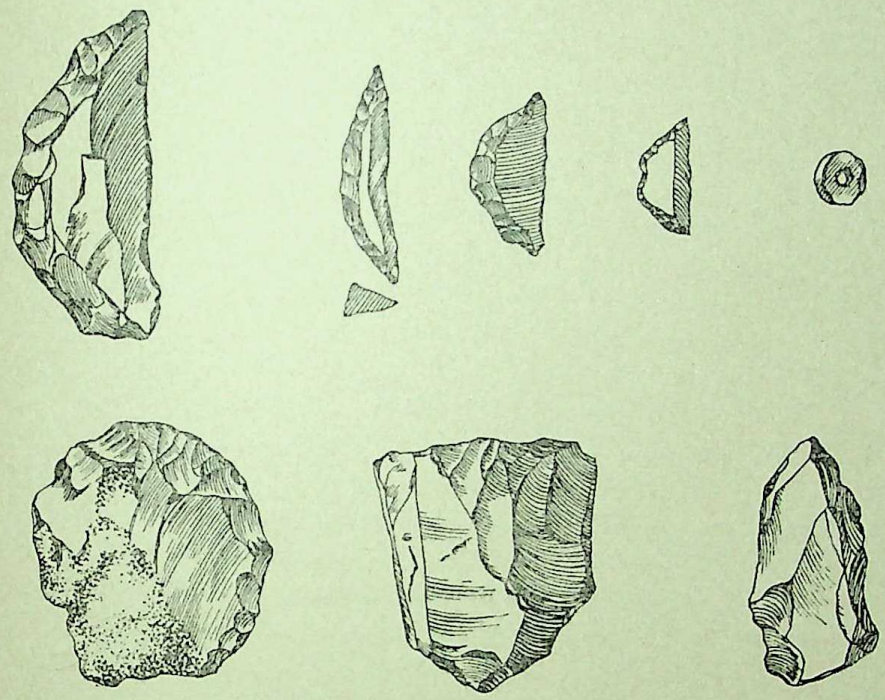

FIG. 11. Flint implements of the Wilton culture, Northern Rhodesia. Scale $\frac{3}{4}$ (after J. G. D. Clark).

Mongolian (p. 53). It was an event that probably began at about the time when the first blade culture peoples were moving into Africa: there is as yet no certain evidence that our species has been living on the American continent for more than fifteen thousand years.

The route of entry, probably taking advantage of the low sea-level of the last climax of the Wisconsin glaciation, has already been discussed. It seems that from Alaska these pioneers followed the Mackenzie river into the northern plains, whence some pushed up the Missouri to cross over into the Snake River valley and so southward on the Pacific side of the mountains, while others used the corridor east of the Rockies (early freed from ice) for their gradual expansion south. The western migrants seem to have swung eastward into the Rio Grande. Equally with all other groups pushing southward and eastward they could have converged upon the bottleneck of

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Central America before the settlement of the southern subcontinent. The spread of man throughout the New World may have taken up to ten thousand years, for there is some evidence that the extremity of South America was reached about 6000 BC. For us there is something dramatic and moving in the thought of these little groups of hunters setting out to people so vast a realm where no human being had been before them. The feeling persists, even though we know that for them there was no comprehension, only the immediate lure of a coastline, valley or pass, a desire for fresh hunting grounds, and perhaps a trace of that spirit of curious adventure that seems likely soon to lead us on a wild-goose chase to the moon. The newcomers as they spread through northern and Central America appear early to have developed two broadly distinct ways of life, two differing economies, which are inevitably reflected in their material equipment. These two traditions have been distinguished as the Palaeo-eastern and the Palaeo-western.[8] The Rockies roughly divide them, but in the Great Basin area of the south-west United States both are present in equal strength.

The creators of the Palaeo-eastern cultures were big-game hunters whose largest quarry were first mammoth and then bison. Their most characteristic remains are the stone or flint heads from the spears or darts which they probably usually hurled from spear-throwers. Spear-throwers, as we have seen, were used by the Upper Palaeolithic peoples of Europe and they were to have a long history in the Americas, surviving as the *atlatl* into recent times. The lives of the American and of the European hunters of this time, separated by such a vast distance, must have had much in common. Indeed, as we look at photographs of the massive skeletons of mammoth and bison slain by the New World hunters with the spear-heads still lying thrust among them, the imagination seeks to bring them to life by recalling the painting of these beasts, often with spears at their flanks, on the cave walls of France and Spain. Although many of the similarities between these late Pleistocene hunters of America and Europe were due to a common way of life we shall show that it is not impossible that a real if tenuous historical relationship did in fact exist between them.

The Palaeo-eastern cultures have been distinguished mainly by their projectile points (Fig. 12). As cultures, indeed, they remain flimsy and there is a need for more living sites to be explored before they can be given any solidity and before the real cultural pattern behind them can be established. The earliest at present recognized is the Sandia, named from a cave in New Mexico. Although dating evidence is slight, it may well go back to 12,000 BC or beyond. Next follows the Clovis, in which the distinctive American technique of fluting first appears (p. 174). Points of this type have been found with the remains of mammoth at a number of sites in Arizona, New Mexico and Texas and they are widely distributed elsewhere. They reach north Mexico, Guatemala and Costa Rica. The Folsom culture, with its elegantly fluted points often with a hollow base and little ear-like barbs, was almost

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1 *Folsom point and associated fossil bison ribs embedded in matrix, Cope Station, Folsom, New Mexico*

[D.M.

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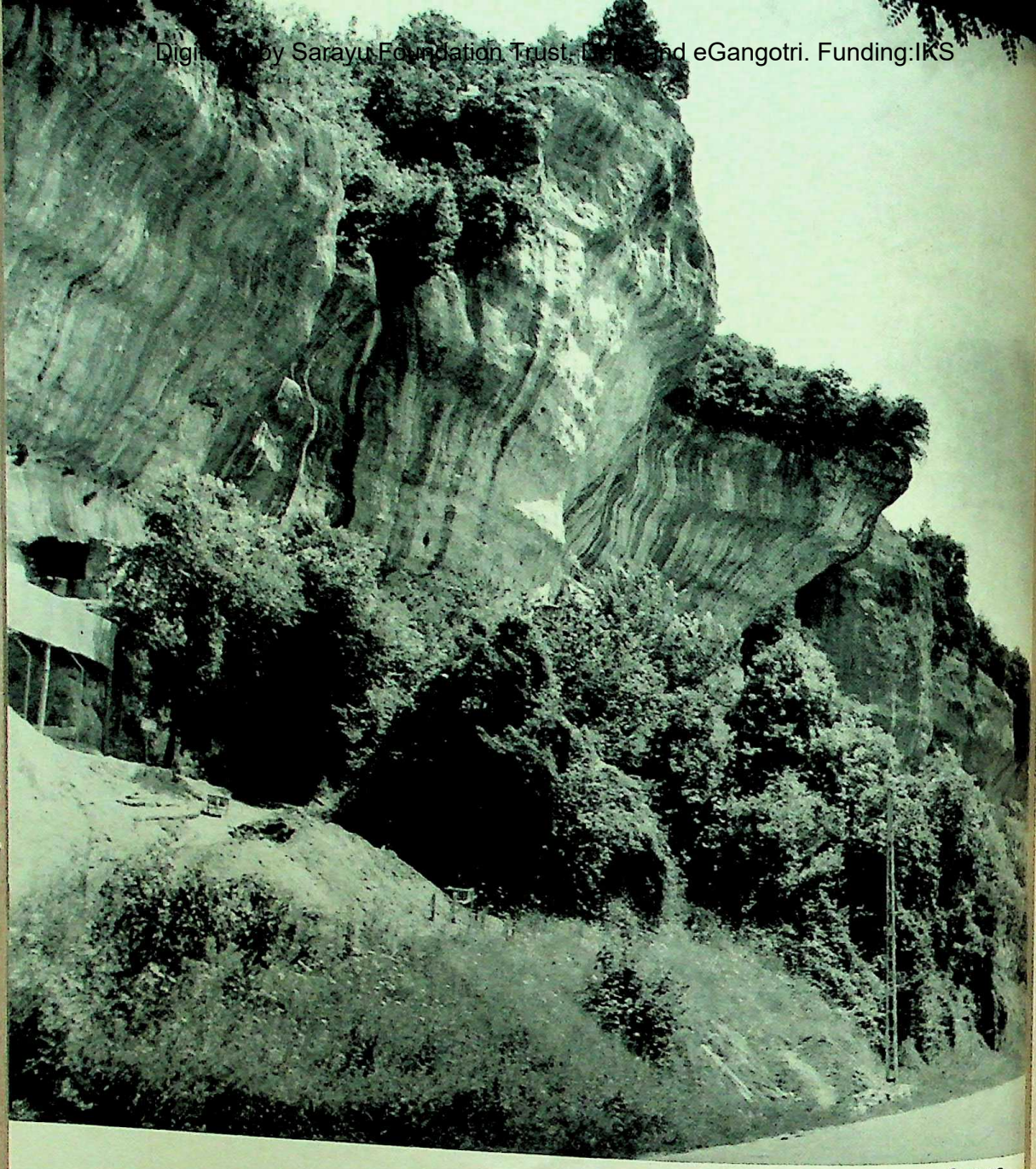

[C.E.S.C.

2 *Valley of the Vézère near Les Eyzies, France*

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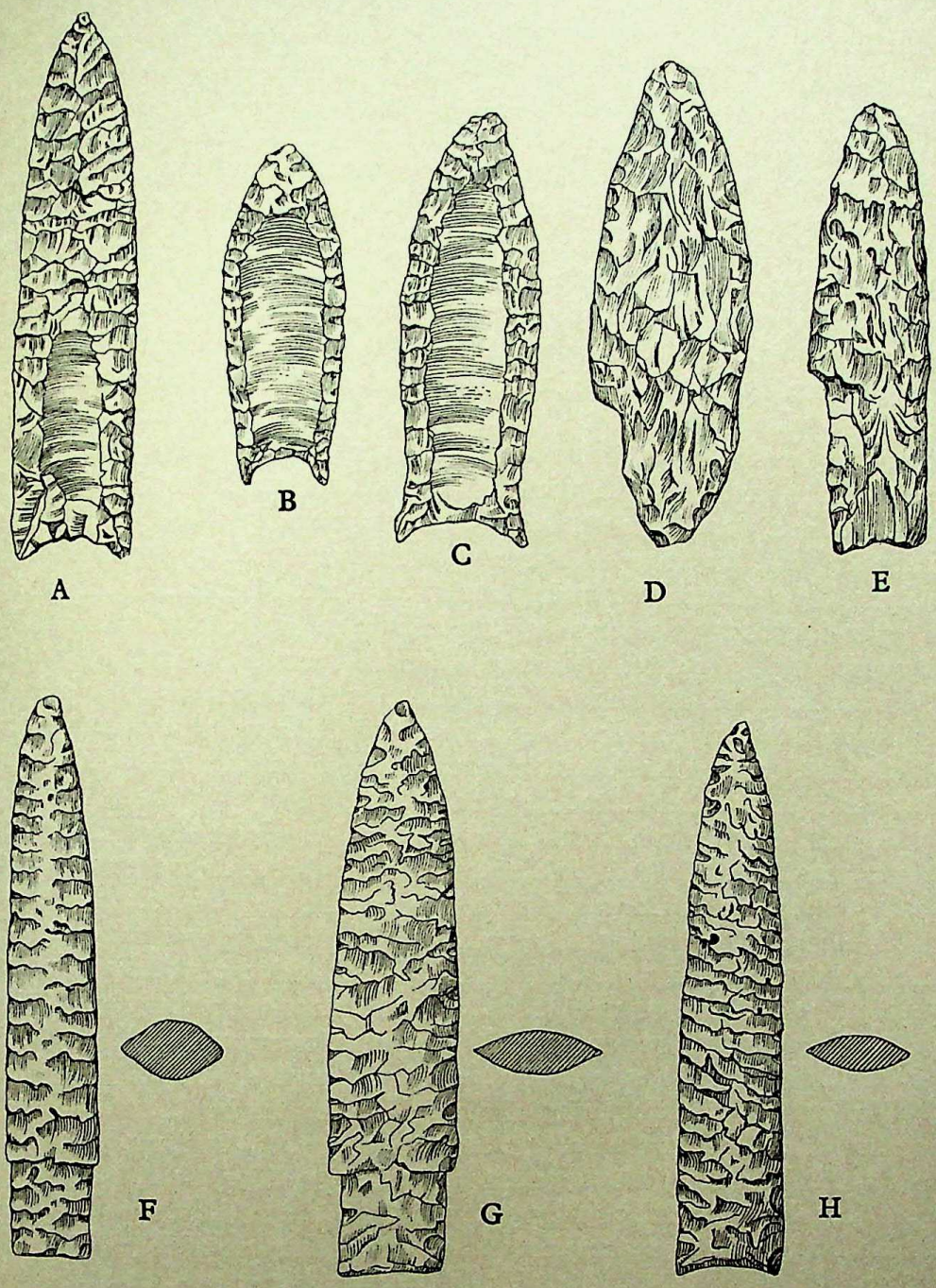


FIG. 12. Projectile points from North America. A: Clovis point; B: Folsom point; C: Ohio point (type of eastern United States); D, E: Sandia points; F: Eden point; G: Scottsbluff point; H: point with oblique flaking. Scale 2/3 (after Wormington).



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certainly derived from the Clovis. Folsom points have often been found embedded in the remains of extinct species of bison (Pl. 1), and the centre of their distribution is the High Plains and the area to the west of them. Both geological evidence and Carbon-14 dating make it reasonably sure that this culture was flourishing by 8000 BC, a time when spreading forest was bringing the big-game hunting life to an end in Europe and true Mesolithic cultures such as the Maglemosian were developing in response to the change.

While it is impossible here to pursue all the various subdivisions of the Palaeo-eastern hunting peoples of North and Central America (p. 174) something should be said of discoveries made in the Valley of Mexico. Near Tepexpan, about a score of miles north-east from Mexico City, bones of a mammoth (an imperial mammoth, in contrast with the Columban species associated with Clovis points) were found in the silt of a dried lake bed. Between the ribs lay a projectile point. Near by in Santa Isabel Iztapan another elephant was killed with projectile points similar to the Plainview points of the USA. This particular kill was probably made round about 10,000 BC and the spear-head used was of a non-fluted type with a widely scattered distribution extending northwards into Canada. It has been suggested, though at present on quite insufficient evidence, that it may be a weapon type associated with the earliest migrants and diffused by them from the far north down into Middle America. This remains to be proved, but what is certain from the find at Santa Isabel Iztapan is that hunters had carried the Palaeo-eastern cultural tradition as far as the Valley of Mexico before the end of the Pleistocene period.

While the peoples who created and developed the Palaeo-eastern tradition were game-hunters following a life comparable to that of their contemporaries and predecessors in Europe, the economy of the Palaeo-western tradition from the first depended in large part on food-gathering, including the collection of vegetable foods. A major part of the tradition can be distinguished as the Desert culture, a name first used for the Palaeo-western type of cultures of the Great Basin, but now extended to include comparable cultural groups as far south as the Valley of Mexico and as far north as Oregon.

While the centre of gravity of the Palaeo-western tradition is certainly somewhat later than that of the eastern hunters, its beginnings are now realized to be earlier than was once thought. Danger Cave, Utah, for example, was probably first occupied by 9000 BC. At this site basketry was already being practised at this time, the oldest known example of it in the world. Thus we begin to see this New World tradition as by no means only a poor and late derivative of the Palaeo-eastern, but one of considerable vigour and originality.

Of its characteristic equipment, it can be said that the projectile point was of less importance than among the hunting easterners. Where it is present it is usually rather smaller, being intended for the killing of smaller game, and forms with side notches or tangs for hafting are common. An early form of

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tanged point comes from Gypsum Cave, Arizona, while the side-notched type was present at Danger Cave. The troglodytes at the Gypsum Cave had apparently eaten sloth, camel and horse—a warning against any assumption that the Palaeo-western peoples *never* hunted big game. In general in their flint work they made relatively more use of the core than their eastern neighbours; choppers, keeled scrapers and grinding stones were among their most characteristic tools.

Among developed Palaeo-western cultures special mention should be made of the Cochise of the south-west. Although it probably began as early as 7000 BC when mammoth, horse and bison were still being hunted, from the first the extensive use of milling stones shows that the gathering of wild plant foods was an essential part of the economy. The tradition lasted for many thousands of years and is thought at last to have given rise to the Indian cultures known as Mogollon and Hohokam. A counterpart to the Cochise in Central America is the Chalco culture of Mexico.

There is a third cultural grouping within the North American sub-continent deserving mention here: the Palaeo-northern of Alaska and northern Canada. It was first detected on the site of the campus of Alaska University, Fairbanks, and at several Arctic sites, but is now best understood from Iyatayet on Cape Denbigh, Norton Sound, where the industry has been named the Denbigh Flint complex. This complex has some elements, notably a variety of fluted point, probably derived from the Palaeo-eastern tradition to the south, but it is dominated by Mesolithic or persistent Upper Palaeolithic forms reminiscent of the Old World. These include gravers (burins) which have been compared with those found in Mesolithic sites in Siberia and little many-faceted cores from which are struck tiny prismatic blades, or microblades, which also recall techniques found in Siberia and Mongolia. The microblades were made to be fitted into grooved bone points, and both these and the burins are characteristic of prehistoric Eskimo cultures. As we have seen (p. 53) the Eskimo probably originated in the Old World and their cultural traditions were mainly Asian, so that it appears very likely indeed that the Palaeo-northern cultures were introduced into North America by Eskimo immigrants after the original peopling of the New World. This is in harmony with the still tentative dating evidence. Although the Denbigh complex may possibly have been first established as early as 6000 BC it can be considerably later.

The relatively late date of the known Palaeo-northern cultures is one of the difficulties in the way of linking the late glacial hunting cultures of America with those of eastern Asia whence they must have come. It is not at all impossible that sites along the line of entry in Alaska may now be submerged by the sea. Although a great quantity of new material has been brought to light in Siberia, China and Japan the ages of the various cultures revealed are disputed—estimates differing by as much as ten thousand years. Two contradictory interpretations are current. One that the American

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projectile point cultures were entirely home-grown—possibly having developed out of the retarded chopping-tool tradition of east Asia. The other, which would appear far more in harmony with the world picture, that the eastward spread of the great Upper Palaeolithic blade and burin cultures into Siberia (Lake Baikal and adjacent regions) took place earlier than is otherwise assumed, and that the settlement of the Americas can be regarded as a yet further thrust from the dynamic expansions of *Homo sapiens* during the final glaciation. Whatever interpretation is accepted at last, it already seems unlikely that close counterparts to the cultures of the earliest American hunters will be found in east Asia. Very much of their achievement belongs to the New World.

The American scene can be allowed to lead into that stage of human history falling between the dying away of the Palaeolithic cultures and the emergence and spread of the Neolithic cultures and rather uneasily distinguished as the Mesolithic phase. For in the sense that they were adaptations to the changing environment of the post-glacial world before the development of agriculture, these later hunting and food-gathering cultures of America can be called Mesolithic. In the sense that they had anything in common with the roughly contemporary cultures that grew out of the Upper Palaeolithic traditions in the Eurasian theatre and in some parts of Africa, they are not Mesolithic. This more limited and more correct use of the title applies to a surprisingly widespread series of cultures in which some of the most characteristic flint and other stone tools were very small (intended for mounting many together in a haft) and often in neat geometric forms (p. 154). This trend towards the use of microlithic flints which was the chief innovation of late glacial and post-glacial times was certainly in part a reaction to the great changes in animal life and vegetation which followed the retreat of the ice, in particular to the spread of forests over the once open hunting lands. The modification of the Gravettian culture in Britain into the Creswellian with its far smaller flints has already been described. Exactly the same dwindling took place in many other Upper Palaeolithic cultures, the Magdalenian, the latest forms of Gravettian and in the Sebilian, Magosian and a number of other African cultures. The usual explanations given are that the new abundance of wood made multiple hafting attractive, the smaller forest animals could be hunted with lighter weapons, and also, perhaps, that large blocks of flint were more difficult to come by. It seems impossible to believe that these causes could operate throughout all the territories in which the dwindling towards microlithic size took place, for some of them were within latitudes where the end of the Ice Age meant desiccation rather than forest growth. However this may be, there is no doubt that this common trend did give a kind of unity to post-glacial cultures or that it was sometimes an independent, indigenous development. There was, however, another influence working in the same direction, spread partly perhaps by actual migrations, more by the borrowing of ideas. The

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microlithic element in the culture of the Capsians has already been mentioned, and this tradition which involved the manufacture of exact geometric forms (Fig. 22) seems to have influenced in time many of the Mesolithic peoples of Eurasia. Whether the Capsians of Spain and Africa themselves played an important role in originating and diffusing the tradition is not clear, but there are signs that this influence did come from the south into Europe and perhaps south-west Asia.

For the most part, nevertheless, the Mesolithic age continued the Upper Palaeolithic tendency to develop local cultures, while free movement and group migration among them were probably much less, being discouraged in many regions by forest growth. One very substantial movement, however, there was bound to be: the advance into the habitable parts of northern Europe and Asia which had been covered by ice-sheets.

In France the Magdalenian culture had become the Azilian by pre-Boreal times, and this survived in the more open country of southern and south-western Europe for several millennia. Later, however, other cultures derived from the dying Upper Palaeolithic traditions emerged, important among them the Sauveterrian (formerly known as Lower Tardenoisian) which prevailed over much of France and Britain. Finally Tardenoisian and kindred 'blade and trapeze' cultures became widespread over much of Europe from the Mediterranean to the Low Countries, north-west Germany and south Russia. Although in some sense they represent a late manifestation of Mesolithic culture (they include microlithic forms) it is beginning to be thought that they may have been created by peoples who already possessed some domestic animals—goats and sheep before cattle. If this proves to be so, then we can recognize in them the humble European counterpart to the pre-pottery Neolithic peoples of south-west Asia. Meanwhile the northern territories when first freed from the ice were occupied from Scandinavia to the east Baltic lands by reindeer hunters such as the Hamburgians of north Germany and Denmark who were living still essentially in the tradition of the Upper Palaeolithic and were in part contemporary with the Magdalenians. In pre- and early Boreal times other reindeer hunters developed the Ahrensburg culture of Schleswig-Holstein and the Swiderian which stretched from the Oder to the Volga, through east Prussia, Poland, Lithuania and White and central Russia.[9] In some part of their territory the Swiderians were superseded by the successfully expanding 'blade and trapeze' peoples.

The most interesting and remarkable of the northern cultures were those which developed with the warm weather of full Boreal times (Fig. 13). Peoples who had shared such a Palaeolithic inheritance as the Hamburgian now adapted themselves to a river and seaside life among the forests with determination and vigour; they invented an axe which was effective in felling trees, nets, hooks and all manner of fishing gear; they had good boats and entered into some kind of agreement with the dog for scavenging and hunting. These Maglemosians and their eastern counterpart the Kunda people lived

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a successful forest life from Denmark to Estonia; they also crossed into eastern Britain, arriving before the rising Boreal seas made it an island about eight thousand years ago. The Maglemosians and Kunda people often decorated objects of bone, antler and amber with chevrons, lozenges and other simple geometric patterns inherited from the latest Magdalenian art. They also sometimes engraved highly formalized but quite lively figures of men and animals, and made charming little amber carvings of animals such as bear and elk. Other survivals of naturalistic hunting art are found in the rock carvings of the Norwegian coast stretching up far beyond the Arctic Circle. They were probably the work of hunters who had adapted themselves

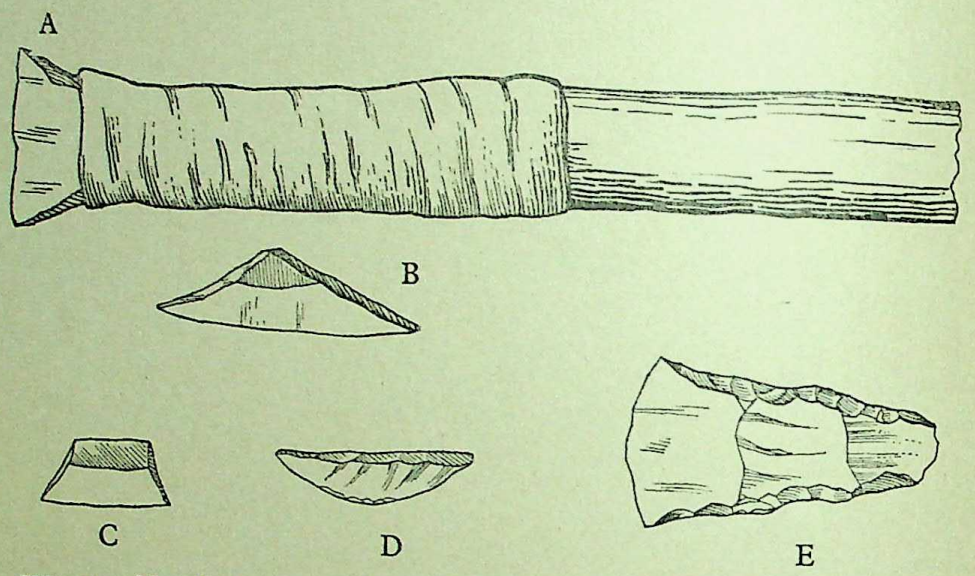


FIG. 13. Mesolithic implements from Denmark. A: transverse arrow-head, Jutland, Denmark; B: triangle; C: trapeze; D: lunate (microliths); E: transverse arrow-head, Ertebølle, Denmark. Scale 1/1 (after Singer).

to sealing and whaling. In the south a group has been distinguished as the Fosna culture, while the northern Komsa culture extends well beyond the Arctic Circle. Both appear to have been introduced from the Baltic by peoples pushing westward round the edge of the ice. The engravings, usually simple outlines on flat slabs of rock, show reindeer and elk, whales and seals. While the Komsa and Fosna cultures date well back into Boreal times, there is no doubt that the tradition of rock engraving lasted for an immensely long time in these last strongholds of the western European hunters;[10] some of the Norwegian engravings probably date from as late as the second millennium BC. Here in these remote northern latitudes was a dim echo of the first great announcement of man's artistic genius made by the Upper Palaeolithic peoples of western Europe.

When seven thousand years ago the moist Atlantic climate caused the northern forests to become yet denser and more difficult to hunt, their

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inhabitants were forced to concentrate their settlements along salt and fresh-water margins where fish, and more especially shell-fish, could form the staple of their diet. The Maglemosian culture was followed by that of the Ertebølle people who have left their huge shell and bone middens along the shores of Denmark. They and all their eastern neighbours continued their hunting and food-gathering life until they began to be affected by tenuous lines of communication reaching them from the new centres of civilization in south-west Asia and the Mediterranean. These peoples are significant because they provided the main root of that 'Nordic race' which we have not been allowed to forget, as well as contributing to the Indo-European stock which played so really important a part in world history. But at this time when from a few small centres the obscurity of prehistory was being dispelled by the light of civilization, they are of no importance. They would probably have remained 'primitives' indefinitely, as did their contemporaries in South and central Africa and in North America, had they not been within nearer reach of the revolutionary new influences.

Some idea has now been given of the post-glacial world on the periphery of this centre of change and growth. In Europe, Africa, India, eastern Asia and America Palaeolithic hunters have been seen adjusting to the warmer earth they had to live on, sometimes by creating true Mesolithic cultures, sometimes by making rough adjustments in the older tradition. In many places these cultures survived with little change into historic times, in back-waters, such as South Africa with its Smithfield and Wilton cultures, right down to our own world.[11]

It is time now to close in upon the creative centre, the region from which the new way of life was to spread, fast or very slowly, to these peripheral lands. It is probably safe to say that the momentous development from food-taking to food-making was achieved, perhaps with no very sharp point of focus, in an area between four waters: the eastern ends of the Mediterranean, the Black Sea, the Caspian and the Persian Gulf—that is to say, among or on the edge of the uplands surrounding the great Tigris Euphrates valley where, much later, urban civilization was to be built on the foundations now being prepared.

Although scattered traces of Mesolithic culture have been found over most of this territory, in Palestine, the Lebanon, Syria, Iraq and Iran, they have not as yet begun to tell a coherent story. Among them the Natufian of Palestine is often singled out as of peculiar historical significance; here is a culture whose creators appear to have one foot in the old Mesolithic hunting world, one in the new life of the farmer. These people, who were very fond of ornamenting themselves with necklaces, pendants, shell-bead head-dresses, lived chiefly by hunting and made Mesolithic types of tool. Sometimes the bone and antler hafts had carved animal forms strongly reminiscent of the ancient hunting art. Yet the hafts they carved were for sickles—unmistakable sickles with the gloss of cutting siliceous stems still

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on them. While it has been supposed that they may have been used for cutting wild grasses, it has also been pointed out that wild crops, falling readily from the ear, are always gathered by beating, and that these glossy sickles must therefore have been used for the reaping of fully cultivated cereals (see p. 271).

In their way of life, still dependent on hunting but reinforced by the harvesting of grain, the Natufians admirably represent the age of transition. So these people, some of whom were buried at the foot of Mount Carmel elaborately decked with fine head-dresses and necklaces, make a fitting subject with which to close a history of the million years during which all mankind knew only the hunting life of the wilderness.

## NOTES TO CHAPTER III

1. Professor G. F. Debetz observes that with regard to the classification of the Palaeolithic into Lower, Middle and Upper Palaeolithic, K. J. Narr [*Abriss der Vorgeschichte* (Munich, 1957), pp. 5–6] points out that there are two different ways of classification existing side by side: 'into purely *chronological* stages (valid for the entire area as stratigraphic-chronological units) and *cultural* phases (starting and ending at different times in various areas, and completely lacking in some regions). Some units that were originally seen chronologically eventually turned out to be definable only from the standpoint of cultural phases. . . . This resulted in a good deal of confusion and contradiction: . . . "Middle Palaeolithic" can only be used as a chronological-stratigraphic term, "Mesolithic" as a chronological-stratigraphic one in its early stage, but as a cultural one in its late stage; "Lower" and "Upper Palaeolithic" are ambiguous in both senses. It now seems to have become necessary to effect a clarification, i.e. to distinguish between purely chronological units on one hand and purely cultural ones on the other. This means that one has to use a dual (double-track) terminology. Thus terms that are ambiguous in both senses have to be formulated more specifically: if terms such as "Mesolithic" and "Middle Palaeolithic" are accepted, "Lower" and "Upper Palaeolithic" can only be conceived in a purely chronological-stratigraphic sense . . . . If on the other hand, one keeps to the cultural meaning of the terms, then logically at least the expression "Middle Palaeolithic" would have to be dropped and included in "Lower Palaeolithic".'

   K. J. Narr therefore suggests distinguishing between a 'chronological classification' (Lower Palaeolithic, Middle Palaeolithic, Upper Palaeolithic, Mesolithic and Kaenolithic) and a 'cultural classification' (Protolithic, Miolithic, Protoneolithic, Neolithic).

2. Professor G. F. Debetz points out that there is hardly any reason to assume that the 'chopper-chopping-tool complex' spread to Europe from Asia. If there did in fact exist in Europe cultures which can be compared to the 'chopper-chopping-tool complex', it is more likely that these were independent parallel developments. For the time being it can only be established that rough flakes and chopping-tools also occur in zones where hand-axes predominate, for instance in Europe; on the other hand, hand-axes are met with, though infrequently, in the province of the 'chopper-chopping-tool complex', for example in Java.

3. The term 'eoliths' (= stones from the dawn of mankind) was introduced by L. Bourgeois in 1863 to denote primitive stone implements ascribed to man of the Tertiary Age. But once the view prevailed that the finds in question were not human artifacts, this term was applied to purely natural products which happened to resemble implements (pseudo-artifacts). Nowadays it appears that in this way some objects have wrongly been termed eoliths in this second sense. On the other hand misunderstandings arise when primitive

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human artifacts from the Lower Pleistocene are now once more designated eoliths, since at present this term is generally restricted—erroneously—to natural products and pseudo-artifacts.

4. The hand-axe must have been used first and foremost for chopping trees and working wood, or for digging up roots, and must therefore have been connected with cultures in zones of forest vegetation or with warm climatic conditions. In colder climates, as in the tundra, or in the steppe, it may have given way partially or completely to the flaking tools that accompanied it. It is a debatable point whether we can deduce from this the existence of two cultural circles in the earlier Pleistocene (hand-axe and flaking cultures), or whether the flaking cultures are a sign of the impoverishment of the hand-axe cultures conditioned by environmental factors. There is also a number of pre-historians who think that the 'Clactonian' techniques were practised by makers of early hand-axes, e.g. in north Africa, where the Acheul I industries have often been termed 'Clacto-Abbevillian', and 'Levalloisian' by the makers of more evolved Acheulian hand-axes. Again, in some territories, e.g. the Vaal R., South Africa, hand-axes were habitually made from flakes. It is not a matter of distinct cultural traditions so much as alternative techniques. Incidentally, it ought not to be overlooked that H. Warren, the 'inventor of the "Clactonian culture" ', has recently expressed his view that the so-called 'cores' of the eponymous site were in reality chopping-tools and that many of the flakes were by-products of the manufacture of such choppers. See K. J. Narr, 'Zur Frage altpalaeolithischer Kulturkreise', *Anthropos* 48 (1953), pp. 773–94.

5. See p. 61, n. 7.

6. It is sometimes maintained that the Abri Audi stage, sandwiched between the Mousterian and Châtelperronian cultures, suggests a transition from the Mousterian to the Châtelperronian in western Europe; at the same time it is pointed out that the Châtelperronian culture in its pure form has so far only been established in France. H. Breuil, on the other hand, argues that there is nothing to show that the Mousterian gradually evolved into the Châtelperronian along independent lines. He is much more inclined to believe that the Abri Audi stage, which according to him emerged more or less locally, suggests a degenerate Mousterian, already influenced by blade cultures [see H. Breuil, *Les Subdivisions du Paléolithic Supérieur et leur signification* (2nd ed., Lagny, 1937), p. 14]. In this connection it should also be pointed out that there are no indications present in western Europe for the development of the Neanderthal type to *Homo sapiens*. Furthermore, it must be borne in mind that in Asia Minor there exists the Emiran culture, which is akin to Châtelperronian. According to Narr, therefore, the position at present is 'that within the early Upper Palaeolithic complexes of miolithic type the connections extending over vast areas are more prominent than the treads leading back to some such time as the European Protolithic. . . . In order to explain the wealth of miolithic culture in Europe as a European regional continuation of the Protolithic, it would be necessary to presuppose a sharp radical change—which cannot, of course, be ruled out *a priori*, but would be a far more complicated hypothesis than the theory that they originated from other areas.' See *Abriss der Vorgeschichte* (Munich, 1957), p. 13.

7. Dr J. Neustupný emphasizes that in this connection mention must also be made of the Szeletian (named after Szeleta cave in northern Hungary), which may have originated from Lower Palaeolithic forms in central and eastern Europe. Related to the Mousterian, Aurignacian and Gravettian, this is a culture characterized by a large number of leaf-shaped points. See L. Vértes, 'Problematika szeletienu', *Slovenská archeologiá SAV*, IV, 2 (1956), pp. 318–40.

8. Of late there has been some discussion in an endeavour to provide a different interpretation of the split into the Palaeo-eastern and Palaeo-western traditions. The starting-point in this discussion is the fact that, on the basis of the $C^{14}$ dating at Tule Spring (Nevada), we must reckon with the possibility that man penetrated into North America as early as the last interglacial period (before the Wisconsin glacial stage). With this very early immigration late Lower Palaeolithic flake cultures, which were probably widely distributed in north-eastern Asia, are thought to have reached America (offshoots of them may be seen in the Cochise culture in the south-eastern USA and northern Mexico). These primitive flake cultures spread fairly rapidly to the extreme



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south, as is shown by a $C^{14}$ dating to about 6700 BC from the Palli-Aike cave in the region of the Strait of Magellan. In part these flake cultures are believed to have survived for a very long time in various areas of North and South America, their characteristic features being the stone-flaking technique and a primitive mode of existence as food-gatherers.

Some doubt is now cast upon the assumption made hitherto that the appearance of advanced hunter cultures with their characteristic pointed weapons in the course of the Wisconsin glacial stage must be attributed to fresh immigrations. But it is also thought that these cultures in the south of North America may have developed along independent lines. There are various circumstances that support this view. It has not, for instance, been possible to establish really convincing parallels to similar cultures in north-eastern Asia, although there would have to be some there if a fresh immigration had taken place. Moreover, the sites of such hunter cultures in North America seem to be more recent the farther north one goes, a point that tells against the theory of immigration from north to south. Finally, there is already evidence in hand to show that the expansion into Central and South America took place at an early stage. For example, there is the Toldian in the south of the Argentine, labelled by O. Menghin as Late Pleistocene; this may have exerted an influence upon the primitive inhabitants of the Palli-Aike cave in Tierra del Fuego. See A. Varagnac, ed., *L'Homme avant l'écriture* (Paris, 1959), pp. 165–87; O. Menghin, 'Fundamentos cronologicos de la Prehistoria de Patagonia', *Runa V* (Buenos Aires, 1952), pp. 33–43; O. Menghin, 'El Altoparanense', *Ampurias*, XVII/XVIII (Barcelona, 1955–56), pp. 171–200; P. Bosch-Gimpera, 'Asia y América en el palaeolítico inferior. Supervivencias', in *Miscellanea Paul Rivet Octogenario Dicata* (Mexico, 1958), I, pp. 49–76; R. S. MacNeish, 'Preliminary Archaeological Investigation in the Sierra de Tamaulipas, Mexico', Philosophical Society *Transactions*, N.S. 48, Part 6 (Philadelphia, 1958).

9. On dating and cultural position of the Ahrensburgian and Swiderian culture, see Ch. VI, p. 184, n. 13.

10. The origin of the Komsa and Fosna cultures (jointly also termed Finnmarkian) is still none too clear, but it is probably beyond the bounds of possibility that they originated in the west. The Komsa culture seems to have been introduced from the east along the Arctic shore. Even if the Fosna culture is not derived from it directly, but from offshoots of the Late Upper Palaeolithic Ahrensburgian culture of northern Germany, there is still no reason to assume that it originated in the west. The Ahrensburgian culture, as well as the related and somewhat older Hamburg culture, originated in the east. See Ch. VII, p. 214, n. 2.

11. It may be relevant in this connection to add a few remarks with regard to the value of ethnographical and archaeological analogies. Recognition that an analogy has limits to its usefulness, and may be only partial, is essential; there is a tendency to forget that it *is* only an analogy, and to incorporate it as directly relevant evidence. Sometimes contemporary non-literate peoples are, in effect, treated as if they represented Stone Age man; and material relating to them is used to demonstrate how Stone Age man must have lived. Some archaeologists make use of this sort of analogy, in the absence of any comparable data from their own field; but this is always a procedure to be employed with care. Despite the fact that archaeological evidence tells one little about social structure, or social systems, the criteria used by the author of this part in assessing 'stages of development' (p. 270; also 'stage of social evolution', p. 269) are technological, e.g. stone tools. This in itself contributes to a unilinear view of human social development, to the virtual neglect of other factors which are just as important. It must be emphasized that, according to R. M. Berndt, for example, the identification of Australian aborigines with Stone Age man is a spurious one, since it seizes on a few points of material culture, without paying equal attention to other cultural and social features; and it pushes into the background the similarities between the aborigines and other contemporary living peoples—including ourselves. The same kind of labelling, in what could perhaps be called conceptual shorthand, appears in such statements as that relating to the destruction or absorption by the Mongoloids of 'various older populations' (p. 57). There is a time confusion here, since what is evidently referred to in this and similar examples is the

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relative length of time one population, as contrasted with another, had been associated with a certain locality: it is a time plus locality reference, *not* one of 'earlier origin'. As regards the use of analogies, we are confronted by the need for reliable data, as contrasted with the interpretation and evaluation of these data—a problem always particularly relevant where reporting of unfamiliar situations is concerned. Early references are to be treated with extreme caution; and because contemporary published material is often so scattered and so scanty, it may be essential that more than a few sources should be consulted in any reference to them. It is equally essential that personal views should not be taken as statements of more general relevance.

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CHAPTER IV

# MIND

THE expansion of consciousness is a main theme of history. Nothing has greater significance than the development and exercise of the combined mental powers of intellect and imagination, the two springs of human greatness. This must be the estimate of the humanist; if it were added that it is through these gifts that God has made us aware of divinity, then there are few people in the world who would challenge it.

In man's animal past as one of the primates, the sharpening of sight at the expense of the more lowly sense of smell that went with living in trees, contributed to a heightening of mental faculties; only birds, carnivores and primates are equipped with a specially sensitive spot on the retina which provides for great acuteness of eyesight. When to this sharpness of sight the stereoscopic vision was added, while the habit of grasping branches and seizing insects and fruits produced a flexible hand, the way was open for further advance. An ape or monkey fingering at the same time as it scrutinizes some unfamiliar object offers a good symbol for the dawn of both conscious apprehension and skill. Much has sometimes been made of the great importance for human evolution of the hand with its opposable thumb; it was important, certainly, but only as the servant of a waxing brain. The hands of the higher monkeys would be perfectly capable of the finest skills had they a mind to set them to work; monkeys could be watch-makers had they ever conceived the notion of time.

A further stimulus to mental growth was given our ancestors when they left the trees and a mainly vegetarian diet and began to adapt themselves to living in relatively open country and eating meat.[1] It may be that the actual chemical constituents of meat were of benefit to their brains; undoubtedly its nutritive value, so much greater than that of herbs and fruit, relieved them of the necessity of perpetual eating. More important, the need for a creature with a relatively flat muzzle and lacking sharp claws or canine teeth to kill, skin and break up animal food must have led first to the use and then to the manufacture of tools. Once manufacture had begun, our forebears had stepped to an altogether higher plane of concentrated visual attention and manipulative skill. It may be that the controlled use of the hand helped to develop another essential human faculty, that of speech.[2] It has been found that movements of the hand provoke a sympathetic movement of the mouth, and it may be that a habit of communicating by gesture helped to induce the controlled emission of sounds.

Here again, however, there is need to be chary in any recognition of

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cause and effect. Just as monkeys and some other primates have hands capable of executing skilful tasks were their brains equal to it, so, too, their lips, palate and vocal chords are probably capable of speech. It is the brain power that is lacking. It is easy to say that the need for acute vision, the ability to manipulate, the necessity of cutting up meat, the purposeful concentration required to make tools all led to the multiplication of brain cells in hominid and human skulls, while each multiplication of cells led in turn to a further advance in functions. To this we can add the further idea favoured by many biologists that 'man is a foetalized ape', that is to say that the direction of human evolution was towards resembling the young and not the mature primate, and that this postponing of physical maturity gave opportunity for a longer period of learning and experiment and further increase in brain size. All this interplay of cause and effect can be made to seem very convincing after the event. Yet we should remember that for thousands of years the Egyptians seemed to have very good reason for thinking that the rising of Sirius caused the Nile to flood. It may be that the ultimate cause of the waxing of the human brain, of the expanding of consciousness within it, remains as remote from our knowledge as the mountain sources of the Nile were to the Egyptians.

If causes are best treated with caution, there is no doubt that the strengthening of mental power came with the vast expansion of the cerebral cortex of New Brain in man. The two hollow hemispheres of the human cerebrum are so large that they have become deeply folded and convoluted to house them within the plates of the skull. The great size of the frontal and temporal lobes is particularly characteristic of man, and they include among their millions of nerve cells many groups not enslaved to exact functions but with the storing of memories and their association. Memory, association, leading to image-making powers, these are the capacities necessary for full self-consciousness, for the awareness of past and future, intelligent anticipation and the building of traditions to bind the long life of the race. There is a sequence in the functioning of memory that can be seen passing from the biological into the cultural realm. First the cerebral storing of innumerable items of experience, then their concentration into images that begins the breakdown of the wholeness of experience and hence to the control of life's matrix; next the formation of fixed symbols and more especially the sound symbols of language that make it possible to sharpen the identity of things by the giving of names and to transfer memories and images from one living human being to another. Finally the invention of writing that extends memory outside the living group to all generations and all mankind. By these means what started with the momentary experiences of single individuals may be built into a great and long-lived cultural tradition.

The self-consciousness that intensified with the elaboration of the cerebral cortex, making man more and more aware of his actions and of his separation

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from nature, was to take two main and opposing directions. One was towards controlling the environment. This led immediately to tool-making and then on to the whole accelerating course of our technical and scientific advance. Here analysis, the breaking down of the whole into manageable parts, has been the means, and the ends are wholly practical and material. The other direction is towards reuniting the part with the whole, man with the universe from which his consciousness seemed to divide him. This way led to ritual, art, religious faith, mysticism and some aspects of philosophy. Metaphor, simile, symbolical enactments and other unifying forms have been the means, and the ends, essentially, are not practical or material.

The very evident weakness of archaeology as a proper basis for history is its helpless dependence on material remains and the resulting tendency to over-emphasize the first of these two great ways of human endeavour. Thus, for example, it is not until the sudden appearance of art and ritual burial towards the end of the Palaeolithic Age that we have anything beyond the faintest hint of man's inner, unifying existence although undoubtedly this must have been increasing and refining even while in his extraverted and practical life man went from battering pebbles to shaping a hand-axe. We can assume at the intellectual level a growing ability to categorize and to draw conclusions from the past for the benefit of the future. At the imaginative level there must have been mounting power to picture things (and particularly objects of desire such as game animals) when they were not before the eyes, comparable to the ability to visualize the completed tool within the unshaped block of stone. The beautiful shape of the hand-axe itself can, indeed, be used as a proof of the early emergence of an aesthetic sense. It has even been suggested that the finest of these tools, those which seem so much more exquisitely worked than practical necessity demanded, may have become cult objects like the ceremonial axes of the Caledonian islanders or the very unwarlike silver maces often brought out on state occasions in western Europe.

Whether or not these implements came to possess some special imaginative significance or *mana*, their satisfying proportions show that already a quarter of a million years ago the imaginative mind had its own sense of rightness in pure form which, whatever its source, still holds good for us today.

Consideration of the source of these aesthetic judgements leads to the question of inherent mental patterns of all kinds. It may well be that man's feeling that certain proportions are right or beautiful has always been derived from his participation in the natural world, animate and inanimate, organic and mathematical, from which he emerged. But beyond that there is a widely held and also strongly contested view that human beings are born with certain innate mental forms which have come into being through the experience of the evolving species. They are inherited just as the similarly evolved bodily parts are inherited, but as they are mental they tend to be expressed in cultural forms, most obviously in religious myths, which

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although they differ in outward form with the tone of the culture concerned, often appear to have an underlying unity that is world-wide and timeless.[3] These archetypes might correspond on a higher, more complex plane to the undoubtedly innate sense of aesthetic rightness and such universal tendencies as the grotesque in art, animal forms, dragons and other recurrent artistic manifestations.

Although many people cannot accept this idea of the inheritance of mental forms, it is surely far more likely than that we are born with a mental *carte blanche*. At the level of instinct we accept the idea readily enough, even though the instinctual bequest from the past may be highly complicated. Weaver birds, for example, after six generations of having been reared among other birds and deprived of their own proper nesting material, can still in the seventh generation weave their ingenious nests when given the opportunity. At some time in the remote past this species gradually perfected a most unusual form of dwelling construction, and the pattern for it has become fixed in the brain and central nervous system so that it can be repeated at any time by reference to this 'instinctive' pattern book. Surely, then, it cannot be impossible for man to inherit patterns at a more imaginative level from the repetitive experience of twenty thousand generations? Or, having inherited them, that he should find expression for them in myths and other cultural forms?

At least the possibility is strong enough for it to be unscientific to ignore it, particularly when considering the diffusion of cultural traits. When two peoples at some distance from one another possess some peculiar implement, design, myth, in common it may well have been transferred by trade, migration or a spreading influence. These contacts should always be looked for, but if they cannot be detected, then there remains the alternative that the trait represents two independent expressions of a common mental pattern.

Whether or not human beings inherit mental furniture of this kind, there is no doubt that we bring with us from the past very much more than our bodily parts. Forty thousand years after the death of the last Neanderthaler, *Homo sapiens* still carries with him a most powerful inheritance of passions and emotional tendencies acquired through the ages. Even inquisitiveness, the desire to explore, is an emotion proved to exist already in animals. Some modern men have liked to think of themselves as wholly rational and their fellows as potentially so, yet others have concluded that our species is never capable of carrying out a rationally formed intention. The whole course of human history in which so many great peoples have hurled themselves to self-destruction, seems in many ways to support this second point of view. Some rationalists might be happier to have it otherwise, but if we lost our emotional inheritance with its energetic power to galvanize the imagination, the whole creative life of our kind would soon be withered, parched as a mummy.

The mental history of this vast formative time of humanity resulted in

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the emergence of language, of art and religion and of technical skills and primitive science. The other achievements will be discussed in subsequent chapters, but spoken language, a purely mental manifestation which has left us no material embodiment, deserves a place in this more general account of the development of mind.

The new mode of inheritance that came with the spoken word has as much claim to be the distinguishing mark of humanity as the ability to make tools. Without it all cultural progress had to be empirical, all instruction of the new generation entirely by practical example. It has, indeed, been said that 'speech is the correlative of the tool', and that 'man seems to have started to use some form of language at the same time that he learnt to fabricate tools'.

Yet there is no absolute justification for this association; no more than that the intelligent use of hand and eye in manufacture was one part of the general sharpening of faculties which made speech possible. It cannot be too much insisted upon that language and its voiced expression were an invention; they are not innate in the human species as are the songs of birds or the calls of animals. If a child were brought up in silence, it would not produce any articulate speech; there is even some evidence to suggest that if a child is not in a position to learn to talk at the normal time, in the second and third year after the period of free babbling, it is immensely difficult for it to learn at all. The complementary aspect of these facts is, of course, that any baby reared in a foreign land will learn the language of its adopted country perfectly. An Eskimo baby would readily learn to speak Parisian French, a Parisian one an Eskimo dialect.

The genesis of spoken language remains obscure. We do not know why or how the great invention began. Apes have a considerable range of emotional cries, and are given to dancing and rhythmical drumming to express mood. The white-faced gibbon is said to sing by moonlight and at dawn. Apes can also, though laboriously, be taught to enunciate a word or two. Yet they have never themselves taken the first step towards articulate speech. To the question why man did so we can only revert to the old shuffling of cause and effect and say that it was due to his growing brain power, to the associative capacity of his huge cerebrum. To the question how, though nothing can be proved, it is possible at least to attempt a factual answer.

The most coherent account of the origin of spoken language which has been devised claims that the first symbolic sounds were uttered as the accompaniment of gestures, particularly of gestures of the hand. The supporters of this theory point to the sympathy existing between hand and mouth which shows itself in such things as the movements of a child's tongue during writing, or gesturing as an accompaniment to talking. Apes also often synchronize movements of the hands and lips. Certainly, too, primitive peoples such as some of the Australian and North American Indian tribes still maintain a fairly exact sign language which may be a development

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from an early mode of communication. The Arunta, for example, have such a language with over four hundred and fifty signs made by the hands and arms. A means of communication by a kind of general pantomime is employed by the uneducated born deaf and seems to be universally understood; it might be said to be the one form of symbolic communication which really is natural to our kind.

The history of the emergence of language and speech, then, put forward by those who believe that the symbolic sound was at first secondary to symbolic gesture, implies this sequence. First a stage of general pantomime with a subsidiary accompaniment of mouth babble. The babble might sometimes give rise to established 'holophrases' or conglomerations of syllables meaningless in themselves but together expressive of a particular state or happening. Secondly a stage in which pantomime and babble began to give way to more precise gestures associated with correspondingly more precise sound symbols or words. In this stage the beginning of directed thought can be assumed. The third stage sees the complete supercession of pantomime and babble by systematized signs and words. While in the more progressive societies gesture symbols and holophrases were abandoned, in others they have been retained until this day. Sign languages have already been discussed; an often quoted example of a surviving holophrase comes from Fuegans, among whom *mamihlapinatapai* is said to signify, 'the state or event of two persons each looking at the other and hoping he will do something that both desire but are unwilling to undertake'.

Once the third phase was reached, the isolation of individual items or objects of experience had been achieved and analytical thought made possible. From that time language was likely to flower rapidly, with syntax, vocabulary, and such special categories as numeration keeping step with general cultural development towards increasing abundance and complexity. Some support for the derivation of speech from gesture is provided by the anatomy of our brains. There is no precise speech centre; instead it is controlled from a large cortical area extending from just in front of the visual area, across the auditory to the edge of the motor region. This area is always found in the left hemisphere in right-handed individuals and in the right among the left-handed.

The result of isolation by naming is of special importance. The uneducated born deaf (who offer a fair analogy in certain respects to mankind before language) are unable to break down the world confronting them; they experience life as a continuous procession of total events, and their attempt to communicate leads to a miming of these unanalysed events. Individuals in this position can remember but cannot reason logically and are therefore most unlikely to be inventive. The story has often been told of how Helen Keller, blind, deaf and dumb, was suddenly reached in her dark silence and made to realize that 'everything had a name'. From this fateful moment when her governess held her hand below a tap and repeated once again the

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sign for water, her mind began to apprehend the world about her and she was soon in full symbolic communication with her fellows. Mankind made this same step towards isolation and control through naming, but infinitely more slowly than Helen Keller for there was no governess in his primeval world, and every sound symbol had to be shaped, remembered, transmitted by individuals who could not at first know what they were doing.

Even if the theory of the origin of speech from gestures is not accepted, the sequence of development from free babbling through holophrases to increasingly exact word sounds must be somewhere near the truth. Whether it was a process which, like most inventions, took place in one region and then spread to other societies, or whether it occurred in many centres independently is unknown. Certainly the great number of distinct language groups show that the later stages of development took place among many isolated societies. The legend of the Tower of Babel presents the opposite of the truth. Today there are no living languages as simple and undeveloped as those of the earlier Palaeolithic hunters are likely to have been. Nevertheless some, such as the numerous aboriginal tongues of Australia, are believed to include genuinely primitive traits, and the existence of languages in varying stages of development has helped to suggest the historical development of word sounds.

Young children of all linguistic groups are found to master the different consonantal and vowel sounds in a closely comparable order. This progression begins after the end of the babbling age when all possible sounds are used haphazardly. All over the world at the succeeding stage infants learn first to distinguish and sound the vowel *a* and the consonant *m*, and then the consonants *m* and *p*. Hence the widespread occurrence of words resembling *papa* and *mama* for the first object to be distinguished in the dawning mind —the parents. The vowels *a*, *i* and either *e* or *u* are established before the others, and certain primitive tongues use only these three vowels. Again certain sounds such as the sibilants *s* and *sh* and the fricatives *f* and *th* are among the last to be mastered by children and are absent in many of the languages of Oceania, Africa and America. A more general rule is that consonants formed in the throat do not come under the child's control until after those formed by lips, tongue or teeth, a sequence reflected in the universal presence of front (mouth) consonants in all languages while in the more primitive back consonants are lacking.[4]

Confirmation of this ordered emergence of symbolic sounds is provided by aphasiacs suffering from progressive lesions of the brain. These unfortunates lose control of sounds in precisely the reverse order to that in which children gain it; if they are healed the order of relearning repeats the childish one. Thus it seems to be proved beyond reasonable doubt that the sound sequence repeated by young children, aphasiacs and the languages of the world broadly represents the order in which word sounds were established during and after the third of the theoretical stages already proposed for

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man's first invention of language. Just as the foetus recapitulates some of the steps of our bodily evolution so each baby generation repeats the steps by which its remote ancestors gradually won the power of speech on a hitherto wordless planet.

At what time in our history did men take these first steps? Many different answers are given to this question, and it seems unlikely that we shall ever know which is correct. Probably from the beginning of tool-making early in Pleistocene times Palaeolithic man communicated by sounds more explicit than those of the apes; perhaps by holophrases expressing total states or events. It has been pointed out that individuals in this condition, like the uneducated born deaf, are unable to use such undifferentiated blocks of experience for conceptual thought and are therefore unlikely to make inventions except by happy chance. In the Lower Palaeolithic period the hand-axe, although it was gradually improved, remained in use as the dominant tool form for over a quarter of a million years. It has been argued, and cogently, that this almost unimaginable slowness of change demonstrates a lack of inventiveness that could only survive among societies without fully articulate speech. The Middle Palaeolithic cultures achieved some more rapid changes if no very important advance; with the Upper Palaeolithic there was a rapid acceleration, marked by a purposeful elaboration of specialized tools and weapons (p. 149) and the birth of a visual art in command of almost all the techniques practised today (p. 194). Even the most dispassionate estimate of the Upper Palaeolithic phase cannot fail to reveal it as the time when man first seemed to take a grip of himself and his surroundings and lay the necessary foundations on which, with such astonishing speed, civilization was to be built. It is most likely that a most important factor within this new awareness, this new sense of purpose, was that the latest Palaeolithic hunters had at last succeeded in bringing speech to a point where the precise naming of things and the elementary discussion of ideas had become possible.

An alternative interpretation allows a rather higher capacity for speech to Lower Palaeolithic man but delays the moment of revolutionary progress until the Neolithic Age when a settled life, more stratified society and greater numbers of possessions provided an obvious incentive, while at the same time suggesting sharpened mental powers. This point of view has its adherents, but on balance the evidence would seem to support the opinion that it was during the last glaciation that men first learnt to talk coherently together, to discuss simple problems, make plans, and pass on their accumulating lore to their children.

This is not to deny that the great social changes of Neolithic times had a powerful effect upon language. Vocabularies must have been quickly enlarged, most of all by the words devised by potters, weavers and specialists of all kinds. Words for counting up to high numbers would also have to be invented; it has been found that hunting peoples seldom have

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words for numbers above a very few; numeration was needed only when more sedentary peoples began to produce a surplus of goods.

Nothing has been said of the speech of hominids other than *Homo sapiens*. While probably the earliest *Pithecanthropi* made even less progress in language than their more highbrow contemporaries, as even apes are anatomically capable of uttering words, there is no reason to doubt that so skilled a tool-maker as Neanderthal man was possessed of at least a rudimentary language. On the other hand his conspicuous lack of inventiveness suggests that it was not far advanced; failure to develop a fully articulate language may have been one of the cultural handicaps leading to his final submergence.

It is interesting to consider how far language reflects the nature of the culture to which it belongs. Tongues are notoriously easily imposed and assimilated, being transferred by conquest, cultural dominance and migration. Nevertheless, many are still spoken by the racial or cultural groups in whose mouths they were formed, and it is always permissible to seek in them the distinctive cultural flavour of their creators. The Latin, Chinese and Arabic linguistic groups have strongly contrasting grammatical systems: do they express the spirit of their peoples? Many have claimed that they do, but such judgements must always be subjective. It is certainly reasonable to say that while the Indo-European languages were originally of great grammatical complexity, the leading European tongues have all been severely simplified as a result of their long use in the service of abstract thought.[5]

When it comes to vocabularies, a close connection with culture is obvious and inevitable. The Arunta tongue of Australia, in many ways poor and primitive, is wonderfully rich in kinship and ceremonial terms—a reflection of the tribe's preoccupation with family relationship and totemic ritual. Turning to the opposite extreme of development, the English pride themselves on being well equipped to speak of home, the French of love.

A recent discovery of brain science may prove to be of at least indirect linguistic significance. Differences in the electrical rhythms of the brain cells have been found to divide individuals into two principal types: those who tend to think in visual images, and those whose thought is largely verbal. Evidently, then, these two modes indicate some profound mental distinction. May it be that peoples who, like the Japanese, have an exquisite sense of the visual arts and crafts while seeming somewhat uninterested in logical thought and means for its expression, include a high proportion of individuals who think in images, while European and other western peoples who have a passion for abstract thought and have shaped their language to its needs, contain a correspondingly high proportion of verbal thinkers?[6]

One further aspect of speech and language deserves a few words. Man has always been a gregarious species, and this must have been of the utmost importance in the earlier stage of language formation. If, as is assumed (p. 126), the hunting group usually acted under a leader, words of command

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to control behaviour must have been among the first to be established. But if group life helped to develop speech, at a later stage the possession of a common tongue undoubtedly helped to consolidate and isolate the social group, however large or small. Ever since languages proliferated, the other man's incomprehensibility has made him a foreigner.[7]

## NOTES TO CHAPTER IV

1. Professor A. C. Blanc points out that many authors have challenged the view that our ancestors left the trees and only then began to adapt themselves to living in relatively open country; instead, they consider that life in trees of apes is a form of specialization which the human species never went through.

2. Professor G. F. Debetz suggests that the use of the hand in the process of labour activity and of the practical transformation of objects of nature for the purpose of satisfying the material requirements of man conditioned the formation and development of his spiritual faculties: thinking, attention, memory; it complicated and improved such psychic functions as sensation and perception. And our ancestors' requirements for communication, ensuing from joint activities, conditioned inevitably the beginning and development of speech.

3. Professor G. F. Debetz doubts that 'mental forms' constituting the contents of our consciousness are inherited. While adhering to established facts of science, one should, according to him, admit that only physiological mechanisms of thinking and consciousness as a whole are inherited, but not concrete notions or ideas.

4. On this approach W. C. Sturtevant makes the following comment:

   'The order of differentiation given here is *not* universal. Iroquoian languages, for example, lack *m* and *p*, hence Iroquois children do not "distinguish" between *a* and *m* or *m* and *p*. The statements as to *s*, *sh*, *f*, *th*, and the vowels are open to similar objections with regard to other languages. It must also be said that the vowel system of languages differs. Some Caucasian languages have only *one* vowel; others have a dozen or more. A language with three vowels—or one or twenty—or a language lacking *s*, *sh*, *f*, or *th*, is in *no* sense "more primitive" than any other. French lacks *th*; English and most west European languages lack *ɬ*, a voiceless *l* which is present in Welsh and many other areas of the world (it is especially common in North American Indian languages). But this does not make French more primitive than English, or English more primitive than Welsh or Navaho.

   'The "universal presence of front (mouth) consonants" is at least debatable. Such statements are impossible to prove—the next previously undescribed language to be analysed may prove them to be wrong, and it is impossible to search all the literature at present available. "Back" consonants are present or absent without regard to the "primitiveness" of the speakers or the language. English and French lack the German and Scottish *ch*, a back consonant which also has a spotty distribution elsewhere. Arabic has back stop consonants lacking in western Europe. Such facts have nothing to do with the development of language. The statements of the author about young children and aphasiacs may or may not be relevant; and most linguists would deny that any such distinction can be made with regard to "primitive" and "advanced" modern languages.'

5. Dr W. C. Sturtevant points out in this connection that grammatical change has occurred in western Europe as it has everywhere else. Whether or not it has been simplified here is debatable; many who think so say also that the change took place in the direction of Chinese, which they believe to have a 'simpler' grammar. This has certainly nothing to do with any supposed advantage possessed by Indo-European speakers over Chinese or Arabic speakers in capacity for abstract thought. Consider the situation as it was in about AD 1300 or 1400—would not an objective observer have then considered Arabic

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and Chinese cultures more 'advanced' and capable of abstract thought than any Indo-European cultures, except perhaps that of India? The structures of the respective languages were then essentially the same as they are today.

6. Dr W. C. Sturtevant feels that the contrast drawn between the Japanese on one hand and Europeans and other western peoples on the other as regards their capacity for logical thought is not necessarily valid. The fact that, for example, Zen Buddhist thought is not comprehensible to most western Europeans because it is so different from European philosophy is surely not an argument in favour of the view that the Japanese do not think logically.

7. Professor G. F. Debetz considers that the relationship of man and his environment, and the forms of social labour which develop in the course of this relationship, are fundamental in determining the progress of early man in such basic aspects as the manufacture of tools and weapons, the construction of dwellings, the development of speech, artistic creation, and even the rise of religion. It was through work that the consciousness of man was moulded, that speech and art came into being: the mutual relations between man and nature, related to the character and level of the development of labour, could have exercised a decisive influence also on the rise of religion and on its elementary forms.

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CHAPTER V

# SOCIETY

THE gradual, continuous emergence of the human body and the human mind from their animal ancestry has already been traced. It remains to watch artificially created, traditionally inherited forms of society growing from origins as little artificial and as little traditional as the animal family, pack or herd: body, mind and society, the trinity from which culture has grown.

Without society man's mental powers could never have matured—their transmission remains dependent upon it. This is obvious enough. What is perhaps more often overlooked is the individual's helpless dependence upon social tradition; without education into that tradition even the most innately gifted would remain seemingly idiotic. The born deaf are incapable of conceptual thought until reached—rescued—by their fellows; children who have grown up in the wilds or in solitary confinement appear to be hardly human and, as has been said, may never gain full mastery of language. Mozart, had he been born deaf, might have been living a moron's life at five years old instead of performing before the courts of Europe.

The forms of social life in which human intelligence and full consciousness were first incubated must have been of the simplest, having more in common with the family than with our extended social structures. The stages by which they emerged from those of the natural animal community are inevitably far more difficult to trace than the stages of man's bodily evolution. Archaeological evidence is so slight that we have to depend almost entirely on comparisons; on the one hand with animal species most nearly related to the hominids and on the other with the seemingly most primitive surviving societies of hunters and food-gatherers. Both these sources of evidence are plainly unreliable, particularly analogies drawn from modern 'primitives' who may have changed considerably in social structure even if their cultures still seem to belong to the Stone Age. Nevertheless, it is reasonable to suppose that these surviving hunting societies are examples of an extension of the slowness of change characteristic of prehistoric times and that they are therefore likely to preserve social tendencies once universal among mankind.

For the beginnings of human society, the habits of the great apes should offer the most useful comparisons. Surprisingly, our knowledge of the social life of these fellow primates in their wild state is incomplete and disputed. The African apes, the gorilla and chimpanzee, seem normally to live throughout the year in kindred groups numbering from a dozen to a score. Chimpanzees, however, may occasionally form much larger companies. The

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group seems to be to some extent dominated by one or more powerful adult males; yet at the same time the females with their young of various ages form a company of their own within the group, spending much of their time apart from the males.

Undoubtedly the long period of helplessness and immaturity so distinctive of young primates and human children was as vital to the development of society as it was to the development of the brain (p. 105). For many months the young ape clings to its mother, and cannot fend for itself until after it is three years old; it remains sexually immature until its tenth year.

When our forebears left the forests and began game-hunting in more open country the size of the group is likely to have enlarged and its social co-operation to have intensified. While in an arboreal life each individual could readily pick up food for itself, game-hunting is enormously more effective if undertaken as a corporate effort. Baboons, the other primates that have taken to the ground and to flesh-eating, live in large communities and have been observed to hunt together, sometimes even forming a ring and closing in on their quarry.

As for the sexual and domestic aspects of the social life of the earliest men, opinion differs sharply. It has often been claimed (and the claim is still repeated) that the great apes normally mate for life and monogamously. This piece of wishful thinking has been quite certainly disproved. Gorillas, chimpanzees and orang-utans are undoubtedly polygamous, the successful males having possession of all or several of the females in their band. On the other hand the fact that the apes resemble man in having no limited rutting season and are willing and able for sexual relations throughout most of the year, must encourage the closely knit kindred group even as it militates against brief seasonal mating and the seasonal and wholly promiscuous life of the herd. When man emerged from among the primates it was to make monogamy a possible, though by no means a necessary, ideal.

The practice of exogamy, or marriage outside the individual's clan or other immediate social group, is almost as universally prevalent among primitive peoples as is the horror of incest among all mankind. What is regarded as incest, it must be remembered, depends entirely on the type of social structure. There are highly moral societies where the marriage of a brother and sister is permissible while the marriage of distant cousins belonging to the same clan is a horrifying sin. How did the various exogamous systems and the sense of incestuous sin grow from a group life assumed to be comparable to that of the apes?

One explanation has had many followers from Darwin to Freud. This is based on an interpretation of the natural primate family group as being dominated by the most powerful adult males who have possession of the females and keep the young males from them. The deprived sons then leave their group to capture or attract females of another group either to join them or to found a new group free from the tyranny of the old fathers. With

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mankind this habit of seeking a mate outside the group becomes a custom and then a social and moral law whose non-observance leads to sin and guilt.

An alternative explanation depends on the contrary view that the primate family was essentially matriarchal, based on a lasting and indissoluble association of mothers and daughters. The sons would then slip away from the jealous and possessive mothers, sometimes merely making surreptitious visits to the young females of other groups, sometimes taking up residence with them under the awe-inspiring eye of the mother-in-law. While both these interpretations are over-simplified and exaggerated, studies of primate life, particularly among Japanese monkeys, have shown that both could contain elements of truth. Most of all, however, these studies have warned us against generalizations by showing that there is a wide range of social patterns, not only between species, but even within species according to local circumstance.

It appears that dominance among the males depends on seniority. When younger males become mature enough to seek independence from the male elders, they frequently form sub-groups, going about with their own females and tending to avoid the old leaders. (It has not yet been established whether mature males who remain in their groups are barred from intercourse with their mothers.) On the other hand in one instance a young male monkey who had always enjoyed high status as the offspring of a dominant mother remained at the centre of his group and was able to take over the leadership directly. Yet another closely observed group of Japanese monkeys had no male leaders, the status of the offspring depending on that of the mothers. This group was joined by two males coming from outside.

How important the defence of territory is among the primates is uncertain. Some authorities go so far as to claim that it plays a greater part in maintaining group solidarity than do sexual relationships. With redtail monkeys small kindred units are able to move freely within a territory held in common—an arrangement similar to that shown in the hunting groups and tribes of Australia (p. 119).

While it seems to be confirmed that in its power aspect the structure of most primate society depends on the dominant male elders, the closer and more continuous coherence of the females and their young is of profound significance. It might well be that when among the early hominids possessions and a home base began to gain in importance, this mother-dominated sector of society would have increased its influence. Today it is unfashionable to talk about former more matriarchial orders of society. Nevertheless, there is evidence from many parts of the world that the role of women has weakened since earlier times in several sections of social structure.[1]

So against the exacting climatic background of late Pliocene and Pleistocene times we have to picture animal behaviour evolving into social conduct; kindred groups becoming the exogamous clan within the tribe; instincts and habits of sexual intercourse and mating being more and more artificially

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directed and circumscribed until any infringement of the code gave rise to a social interplay of condemnation and guilt. All these steps from natural animal life with its predominantly biologically inherited patterns to traditionally acquired and consciously enforced social organization must have been taken so gradually over the hundreds of thousands of years available that there was no kind of break between them. At no point in time, even though the point were allowed to cover several millennia, would it have been possible to say, 'This is no longer the animal family or horde but society; this is no longer mating but marriage; this is no longer male and female but husband and wife'.

Archaeological evidence for the emergence of human society before the Upper Palaeolithic Age is necessarily exiguous. The relative abundance within limited areas of the remains of *Australopithecus* suggests that these little ape-men lived in bands of some size; the more dubious evidence that they were successful hunters of baboon and other agile game would speak for cunning co-operation in the chase and perhaps specialization of the males as hunters. The caves at Choukoutien with their relics of men, women and children (as we can now call them in respect of their status as hominids) suggest family life of a kind, strengthened by the occupation of a chosen dwelling and sharply demarcated from the surrounding tide of animal life by the possession of the hearth fire. The ability of these men to kill deer must now more surely than with the Australopithecines be taken as proof of the organized hunting party, while the gathering of hackberries may very well have been a task undertaken by the women.

A special social problem is posed by the very strong evidence at Choukoutien for cannibalism: several of the skulls were broken in a way that suggested the individual had met a violent death and the skull been opened for the removal of the brain. Cannibalism is of very many kinds, sometimes ritual, sometimes frankly indulged in to satisfy a taste for human flesh, sometimes induced by necessity. Some primitive peoples have been recorded to eat their dead as the most respectful form of disposal, some again to kill their old people of necessity and eat them for respect and wisdom. The skulls at Peking, however, rather suggest that this was not domestic cannibalism of any kind, but a killing of individuals belonging to other groups. If this is so, then already by the second interglacial age men were recognizing members of their own species as enemies outside society and fit to be eaten.

It would be of immense interest to know whether the social organization of the more progressive races on the Neanthropic wing of advance differed from that of the *Pithecanthropi*. The Acheulian occupation of the Tabun cave on Mount Carmel with its hearths and litter of food bones is not in this respect to be distinguished from Choukoutien. The famous Acheulian site of Orgesailie in Kenya was an open air encampment beside a lake in the Great Rift valley. There were no surviving traces of either substantial shelters or of hearths. It is only perhaps worth reflecting at this point that while

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the haphazard tools of Peking man (p. 168) look as though they might usually have been made at the moment they were wanted, Acheulian hand-axes, and the chipped stone balls found at Orgesailie and thought to have been joined by thongs for use as bolas (p. 66), must have been made deliberately and in advance of need. At Crayford in Kent a flint-working floor was found where Levalloisian knappers had flaked great numbers of tools at some time during the last interglacial phase. It was a regular workshop. Thus although there is not likely as yet to have been much specialization of occupation, every man making his own tools, there must have been a very real specialization in the use of time, with hours or days set aside for the labour of manufacture.

Before passing on to the Upper Palaeolithic and Mesolithic population whose social structure can best be considered in relation to that of modern hunting peoples, something should be said of the Neanderthal breed, living in the forward-looking era of the Upper Pleistocene yet physically so retrograde. The intensely cold climate in which they lived during the latter part of their dominance drove them wherever possible to be cave-dwellers. Such harsh conditions may perhaps have reduced the normal size of the social group and knit it closer together. There are a few hints that among these creatures the family bond was more strongly developed than it had ever been before. Ceremonial burial, the interment of food and weapons with the dead, which is found first among the Neanderthalers suggests a heightening of family and social feeling. Notions of the dead living on, the wish to provide for them, mean that they have an emotional survival in the minds of the living. That is where the after-life takes place. It is true that provision made for the dead may be to appease dangerous ghosts, but the fact that a young child could be buried with as much care and ceremony as any adult should mean that an emotional bond was paramount.

The Neanderthalers were brave hunters, going out successfully after mammoth and rhinoceros and therefore presumably working together. They, like *Pithecanthropus*, appear to have been cannibals with a strong partiality for brains.

There is very good reason to guess that among the advantages enabling the Aurignacian and other Upper Palaeolithic people to oust the Neanderthalers was a superior social organization. We know they had better tools and weapons and have supposed them to possess a more effective language: it is most likely that they would also have formed much larger social units, with a considerable tribe that could be rallied under some form of central leadership. Most of the peoples who have maintained a hunting economy into modern times have a more or less complicated system of clans within the larger body of the tribe. In Australia, where a Stone Age way of life survived intact into the eighteenth century, there were some three to five hundred tribes in all, each with its own dialect or distinct language. The normal living unit was of twenty or thirty individuals (among the Tasmanians

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smaller still), but they would meet together for jamborees at times of year when food was plentiful and the whole tribe would confirm its unity through feasting and dancing. Even the tribes themselves had a few bonds that might draw them into a loose confederation. A rather similar state of affairs existed in North America, with an even more bewildering number of tribal languages, proving a long period of isolated evolution even among neighbours and confederates.

It is impossible from archaeological evidence to detect the existence of tribal units. Most of the cultures described in Chapter III are evidently too big to represent any kind of coherent social organization; the Aurignacian and Maglemosian, for example, would have been united only by a general cultural inheritance such as would have been common over vast territories in Australia. Conceivably we may in time be able to detect tribal division within these larger cultural patterns; it has already been tentatively suggested that Mesolithic Britain can be split into five tribal areas. Again it is possible that a very clearly defined invasion of new traditions into a limited area such as that of the Solutreans into western Europe may represent a movement with as much social solidarity as that of the peoples of the folk migrations during the European Dark Ages.

As for total numbers, they would still have been very small. Although such inventions as the spear-thrower and bow and arrows would certainly have appreciably increased the food-winning capacity of the most advanced of the Upper Palaeolithic peoples, no hunting economy wholly dependent on the natural food supply can support more than a very thin population. The inhabitants of the whole island continent of Australia at the time of its discovery by western man probably numbered between a quarter and a third of a million. In Alaska when it was purchased by the United States the population was about twenty thousand to over half a million square miles; in the North-West Territories there were no more than six thousand five hundred natives to over a million and a quarter square miles—the variations between the two being from one in twenty-five square miles to one in two hundred square miles. This is a wide range, but even in Alaska human beings were certainly very thin on the ground. One is reminded of an eighteenth-century traveller in a very different part of North America who reported, 'there are very few Californians, and in proportion to the extent of the country, almost as few as if there were none at all. . . . A person may travel in different parts four and more days without seeing a single human being.'

The conditions in Alaska and the North-West Territories have enough in common with late glacial Eurasia for comparison to be useful, and on this basis it has been estimated that in Upper Palaeolithic times the winter population of the peninsula later to become the British Isles was about two hundred and fifty. Certainly under glacial conditions Britain was very much on the fringe of the habitable world, and there is no doubt that in more

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favourable areas such as south-west France and northern Spain the big game was enough to support many more hunters; the same may have been true in the pluvial conditions of the most favourable parts of Africa. Nevertheless it is safe to say that the number of men, women and children living on this globe twenty thousand years ago was very much less than are now packed into the little space of London or New York. One species was about to begin the expansion that was to alter the face of the continents, but as yet a world traveller would have found men 'as few as if there were none at all'.

While then we can be fairly sure that the Upper Palaeolithic hunters lived in groups of from half a dozen to thirty and that these groups may have formed larger tribes of up to a thousand individuals, it would be interesting to know whether they had also developed certain other forms of social organization that are widespread among surviving hunting peoples and often of very great importance in the shape and colour of their lives. Many of them throughout the Old and New Worlds have a system of clans which may or may not coincide with the group living together; it has become customary among anthropologists to distinguish between the clan in which descent is matrilineal, probably the older custom, and the gens in which children belong to their father's group. Within the clans and gens there may be further subdivisions with social, educational and religious duties to the community: curing societies, rainmakers and the like. Almost invariably the clans and gens are exogamous and to contract a marriage within them would be regarded as incestuous; sometimes the choice of husband or wife is quite narrowly limited to boys and girls of a particular kinship within the appropriate clan.

Two further social ingredients are commonly though not universally related to the exogamous clan system. Very often the clan is totemic, and very often admission[2] is related to initiation rites involving fear and physical pain or mutilation that seem to symbolize the idea of death and rebirth into the full life of the tribe. Both these conceptions are powerful and highly elaborated among the native Australians.

Totemism has been defined by Fraser as 'an intimate relation which is supposed to exist between a group of kindred people on the one side and a species of natural or artificial objects on the other side, which objects are called the totems of the human group'. The 'objects' are most often living creatures, as for examples in the Australian kangaroo and witchety grub totems. Although there may be a strong religious undercurrent, the totemic relationship is essentially a social one, the men feeling kinship and affection for their totem, both being descended from common ancestors, usually ambivalent figures, with animal and human aspects. Frequently it is tabu for the human members of the totem to eat their animal kin for food, although they may have to partake of it ritually in a communion meal. A notion is often found, particularly in Australia, that the totemic animal spirit enters into the woman and begets the child so that the relationship is

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renewed with every generation. It is at once apparent how this idea of totemic conception and of all the members of the clan being one flesh almost presupposes exogamy and a matrilineal basis for clan membership, particularly when it is remembered that, even allowing for anthropological enquirers being deliberately misled or baffled by habits of thought which allow two explanations to be equally true, it appears to be a fact that Australian and a few other primitive peoples did not understand biological paternity or accept a necessary connection between sexual intercourse and conception.[3] If when all society was young this ignorance was more nearly universal, descent through the female line was, of course, inevitable. In Australia itself a majority of the tribes has developed partially patriarchal institutions, the women going to live in their husbands' families and being much reduced in status.[4] This is not true of all the tribes, and, moreover, there is much to show that formerly matrilineal descent and matrilocal marriage were general and the status of women very much higher. This state of affairs still prevails among very many societies in North America and Africa and among the Dravidians of India; relics of it persist in Melanesia, Micronesia and Indonesia. Nor is it limited to uncivilized peoples, for it is evident in the background of Egyptian and Homeric society, while among the Cretans the position of women seems to have remained exceptionally high.

The very widespread prevalence of various combinations of clan structure, exogamy, totemism and matrilineal descent encourages a belief in their extreme antiquity. Is there any evidence for their existence among the hunting peoples of the Upper Palaeolithic Age? Most of what little there is must come from Europe, for the works of art that put us suddenly in touch with the minds and feelings of these fellow-men provide many of the hints on which we have to build. A carving on a bone plate from Raymonden shows a dismembered bison with two lines of men, evidently ritual participants, drawn up on either side. The impression here of a ritual meal of the kind associated with animal totemism is very strong. In addition to the famous 'Sorcerer' from the Trois Frères cave (Fig. 33) there are several other pictures of men wearing pelts and horns or antlers, or alternatively of beings intended to be half animal, half human. Some of these may merely represent hunters disguised to enable them to approach their game, but modern analogies make a ritual identification seem by far the more likely meaning. As for the Sorcerer himself, he must either represent an animal-human ancestor of the totemic type or a man fully identified with an animal, his totem or otherwise, in fertility rites for the increase of the species.[5]

In the remarkable scene of the fallen man and wounded bison at Lascaux (p. 197) the man appears to be bird-headed while planted beside him is a wand with a bird on its top; it is possible that this picture has totemic significance, showing the human member and his totemic emblem.[6] Both Aurignacians and Magdalenians shaped and carved bone and antler plaques

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in ways extraordinarily similar to the Australian churingas or totemic spirit lodgings, even employing the circular and spiral motifs which with the Australians symbolize the spirit-tracks or pathways. Meander patterns painted or incised in caves have also been likened to the painted 'maps' of spirit journeys which form so important a part of Australian rituals and are very prevalent, too, among the ideas of North American Indians. One or two of the Magdalenian plaques are notched or pierced for attachments and may therefore have been used as the special kind of churinga known as the bull-roarer which the Australians used to simulate spirit voices at initiation ceremonies. Again, it has been hazarded that the stencils and imprints of hands, some of them (at Gargas in the French Pyrenees) shown with fingers missing, might be connected with initiation ceremonies and mutilations. This is much more certainly likely to be true of the skulls with front teeth knocked out which date from the Upper Palaeolithic in north Africa (p. 52) and from the Natufian Mesolithic in Palestine.

As for the vast and magnificent array of the animal cave-paintings themselves, can they be said to have totemic significance? This will be discussed more fully in connection with their magico-religious meaning; here it is only worth pointing out that in the western territories of Australia members of a clan would make representations of their totem animal on cave walls and retouch it at appropriate times to secure the fertility of the species. Palaeolithic paintings do show such retouches, and it is just conceivable that the different game-animals depicted, bison, reindeer, cattle and the rest might have been the property of totem clans. Yet there is no doubt that in this ancient art, so much freer and so incomparably finer than the Australian pictures, the religious and aesthetic emotions were paramount.

As for the prevalence of the matrilineal family, is it permissible to see evidence for it in the 'Venuses' and other carvings of women so popular among the Upper Palaeolithic peoples from Aurignacian to Magdalenian times? It would be very rash to be confident of a social significance in these cult objects, nevertheless such a recognition of fertility and the female principle (p. 199) might be allowed to indicate an habitual recognition of the power of motherhood unlikely in a wholly patriarchal society.

Taken together this evidence is surely enough to prove the existence among the hunters of Palaeolithic and Mesolithic times of ideas and rites comparable to the totemism of modern hunting peoples. On the other hand it cannot be said to prove the exogamous clan system; the religious and magical implications are there, but the social side of totemic organization cannot be demonstrated. The Australians themselves are said to have believed that their animal cults and ideas of brotherhood preceded their clan system. Nevertheless, if the very early emergence of the matrilineal family and the custom, and later law, of exogamy which has been put forward (pp. 116–17) is correct, the original and persistent association of the social and cultic aspects of totemism must be accepted. Taking into account the striking

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economic and technical similarities between the Australian cultures and those of the Palaeolithic, the fact that they appear to have been carried early into Australia and to have continued there free from later contamination, and finally the near similarities between them and other primitive survivals throughout the world, combine to make a very strong case for believing that the entire totemic life of these surviving Stone Age cultures perpetuates something of what was evolved by Palaeolithic man between ten and fifty thousand years ago.

The only other indications of social structure and the size of living units are provided by dwelling places. Caves tell us nothing more than has already been suggested (p. 118), but there are a few house sites dating from Palaeolithic and Mesolithic times that are slightly more revealing (p. 134). Among the tribes of southern Russia who had shaped their lives to mammoth-hunting and had to live in regions both caveless and bitterly cold, houses of substantial size were built (Fig. 14). Some of about 5 metres square (or rather roughly oval) would have held a family group of up to a dozen, while the cluster of long, narrow houses on the banks of the Desna at Timonovka could have sheltered a community of as many as sixty men, women and children. If the reconstruction is correct, the pit-dwelling or earth-house at Kostienki by the Don with a length of 15 metres is easily the largest building known to date from before the beginning of farming economies. Unless it was a men's club house, it must presumably have been occupied in sections by a number of families, a domestic arrangement found in the long houses of the north-west coast Indians of America.

For the Mesolithic period the fairly numerous hut sites often suggest small family units. A study made of such sites on the English Pennines, admittedly an impoverished area, has shown that there the Sauveterrian hunters and food-gatherers moved about either in little family parties or in small groups that could camp in about four huts, each only large enough to hold from three to five people.

A discussion of houses leads naturally to what is one of the most essential social characteristics of the purely hunting life—whether of late glacial or any other times: its restlessness. Food supplies will not allow the hunter to settle down except in unusually favourable conditions such as those offered by the abundance of salmon once to be caught along the north-west coast of America. Even if game is plentiful, it may shift its range with the seasons, obliging the human hunters to do likewise. In Upper Palaeolithic times in Europe caves were normally used only as winter dwellings, the groups probably returning autumn after autumn to the same familiar shelter. During the warmer weather they remained on the move, living in temporary shelters quickly built and readily abandoned. Among the more advanced Upper Palaeolithic peoples of Eurasia summer quarters were probably neatly built round huts of the kind sometimes roughly sketched on cave walls that have been likened to the hogans of the nomadic Navaho Indians of the American

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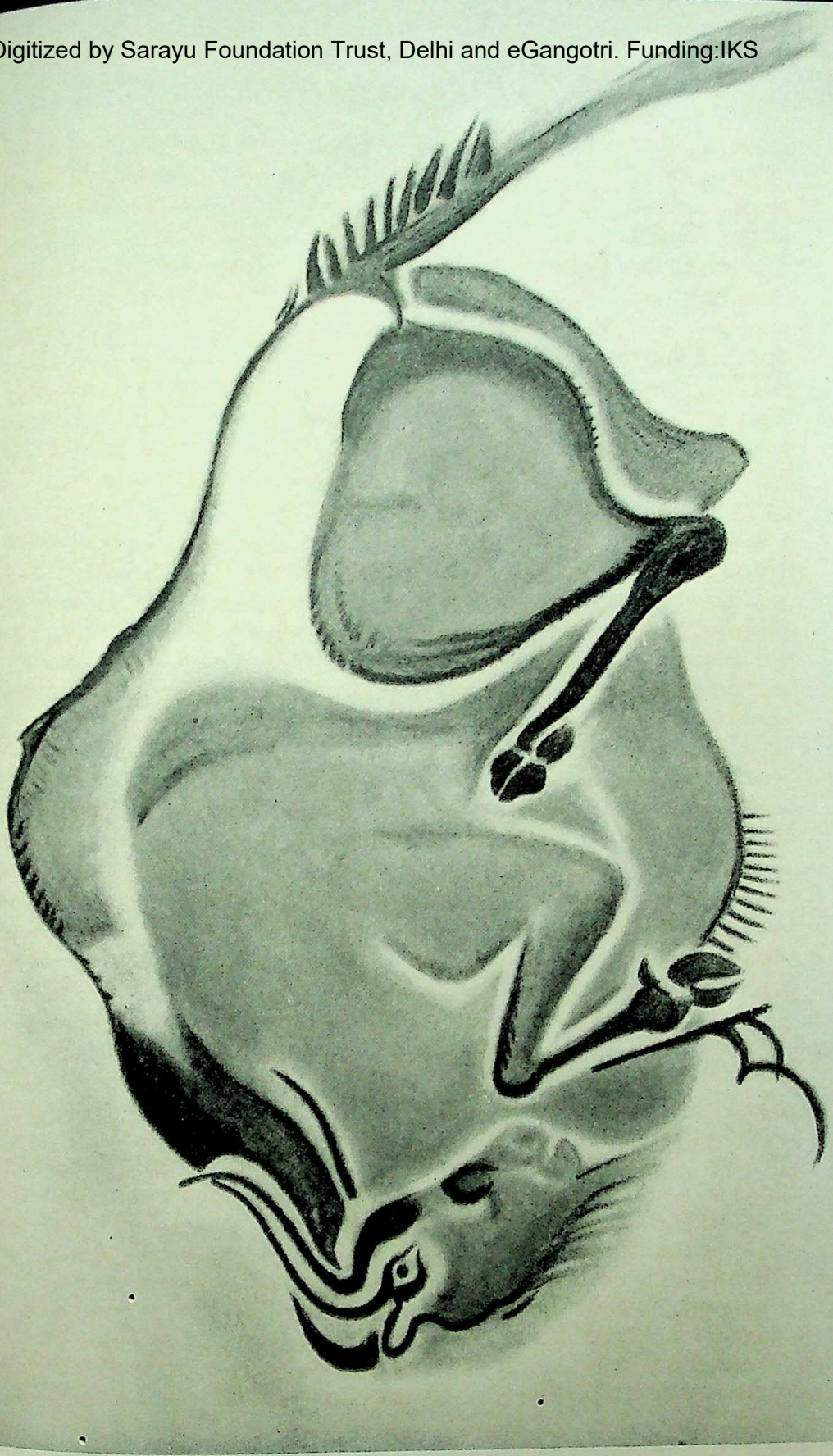

3 *Palaeolithic Cave Painting: crouching bison from Altamira, Spain*

[l'Homme

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4 *Palaeolithic Cave Painting: cow and horses from Lascaux, France*

[l'Homme

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south-west; in some regions no doubt men made do with simple wind-breaks like those put up by the Tasmanians and that most wretchedly equipped people, the Fuegans.

The last Palaeolithic hunters in western and north-western Europe depended very largely on reindeer hunting and must have trekked far in the wake of herds that, like those now tended by the Lapps, might travel hundreds of miles for their summer pasture. It so happens that we know the more southerly reindeer hunters, the Magdalenians, from their winter cave-dwellings, while their northern counterparts, the Hamburgians, we know from their summer camps along the edges of lakes and ponds in the glacial valleys of Schleswig-Holstein where there was abundant grazing in the warm months from June to September. Nearly all the habitations of the Maglemosians of the succeeding Mesolithic period to have been discovered are of similar waterside summer camps where they resorted for fishing, fowling and hunting; very little is known of their winter homes. Those latest Mesolithic peoples who, like the Ertebølle folk of Denmark, took to a strand-looping life largely dependent on shell-fish and other sea food seem to have settled down and lived permanently in one place, thus presaging the sedentary habits that were to come with farming.

For the shifting life led by hunters where food is not easily come by, the Australians provide a useful analogy, moving as they do from caves to rough huts and wind-breaks in the open. A vivid picture of a life controlled by seasonal rhythms, with change of territory and habit and type of house, is still to be seen among the Eskimo. In particular the Eskimo of the Barren Grounds have the same close dependence on the caribou as had the Magdalenians and Hamburgians on the European reindeer.

The life of the hunter is restless, dangerous and most uncomfortable, but blessedly free from the monotonous tedium that was to come with farming and reach a climax with the well-regulated factory and office. It is probably, in fact, the life preferred by most men to all other (in contrast here with women); they were conditioned to it for a million years and in the modern world still return to it as a rare privilege.

Social evolution has generally been in the direction of a simplification of such structures as the exogamous clan and its intricate rites, customs and prohibitions, side by side with an immense increase in the economic and functional complexity of society. Every economic advance has seen an increase in specialization of function, a heightening of special skills, until today most of us would be without food, clothes or shelter if suddenly left to fend for ourselves.

Among the Palaeolithic hunters there can have been very little specialization indeed; every man and every woman possessed all the knowledge and all the skills proper to their sex. A division between the sexes there certainly was; women probably never hunted any large game, but contributed to the food supply by collecting wild plants, roots and fruits, and any other edible



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crop that could be gathered with a baby in arms or on the back and toddlers alongside. There is no reason to doubt that from the earliest times the stay-at-home women were the cooks, and, where the climate demanded it, the preparers of pelts and leather for clothes. When the needle was invented towards the end of the Upper Palaeolithic period, the tailoring of garments probably became as special a feminine skill as it is among the Eskimo. To judge from Australian analogy, the stone-working was done by the men only.

All the men would have taken part in hunting and tool-making, although it seems very likely that as equipment became more elaborate, involving the use of bone and antler as well as stone and wood, some individuals may have been recognized as particularly neat-fingered and ingenious and have been enabled to do rather more manufacture and less hunting. Specialization cannot go much farther than this in a hunting economy, for without an assured surplus of food, the full-time artisan cannot be supported. Probably, however, the group was always ready to contribute to the support of a few specially gifted individuals such as shamans and medicine men, sometimes exceptionally intelligent or quick-witted, sometimes with what we should call a low threshold to the unconscious, and therefore able to attain the trances and possessions believed to put them in touch with the spirit world. In Europe, too, it may well be that artists were allowed to be part-time specialists, for the very great technical skill developed must have demanded laborious cultivation. It is interesting to notice that in many instances where the painting of a game animal has been marked with spears or darts for hunting magic (p. 204), this has been done by a clumsy hand, suggesting that the magical rites were carried out by a medicine man other than the artist. Among the South African Bushmen, whose cave-paintings have something in common with the Palaeolithic tradition, the artists formed a clan of their own.

As for leadership within the hunting group, clan and tribe, prestige is likely to have derived from age with its knowledge of tribal tradition, from strength or prowess in the hunt, and from special gifts of the kind already described. Perhaps grandmothers commanded as much power and respect as grandfathers, if the arguments in favour of a matrilineal and matrilocal system of marriage and descent are correct. Nor is it impossible that women were among the leaders in ritual life; certainly the scenes from the Mesolithic rock paintings of eastern Spain (Fig. 28) show women taking an important part in dances and other rites. Character and good sense must have counted among the gifts of leadership then as ever since. For example, among the Andaman islanders the 'Big Man' who is honoured even above the tribal elders is chosen not only for success in hunting and fighting, but also for kindness, generosity and a sound temper.

An absence of private ownership minimized the need for government and the enforcement of law. To judge from Australian and other analogies, the tribe would have had some vague possession of its whole territory, while

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smaller areas within it would have been vested in the family or clan. This ownership by family or clan was probably not absolute, all members of the tribe having a right to hunt over the entire tribal lands—at least for certain animals or at particular seasons. All game killed would belong equally to the group and be scrupulously shared, perhaps with the best portions going by right to elders and medicine men. Individuals would have owned only their tools and weapons and personal ornaments; even ritual gear is likely to have been a communal possession.

As for crime and punishment, the intimate participation of the spirits makes the whole conception very different from the legal codes of secular societies. Crimes of wounding or murder committed against an individual are likely to have been avenged on the principle of the *lex talionis* by his or her fellow clansmen; civil and secular offences against the tribe such as certain infringements against the marriage laws and treasonable consorting with the enemy would be immediately punishable by common consent.

A pictorial record of an ancient punishment is preserved in the 'execution' scene among the paintings in the rock shelter of the Cueva Remigia in eastern Spain. Probably by far the commonest offences were those committed against the spirits. Such sins as witchcraft, failures in ritual observance, and above all the breaking of tabus were more dangerous to the tribe than secular crimes. Among modern primitives they may sometimes be punished by social ostracism, or by outlawry, in itself almost a form of death sentence. More often, however, the breaking of a tabu is expected to bring its own punishment—and does so. The terrible dread of the anger of unseen spirits felt by the offender, enhanced by the wrath and fear of his fellows, is more effective as a deterrent, more dire as a punishment, than anything that can be imposed by secular authority. It seems to be a far more potent sanction than was the fear of hell in mediaeval Christendom, for suffering was expected to be immediate and not conveniently postponed to a future world.

It need hardly be said that the social morality evolved by long custom for the protection and well-being of members of a tribe or other group did not apply to 'foreigners'. As among modern societies, to inflict discomfiture and death upon members of other social groups was not crime but admirable bravery or cunning. Mention has already been made of the evidence for the destruction of enemies among the Pithecanthropic and Neanderthal men. There are one or two instances of flint points found lodged in human skeletons of Upper Palaeolithic Age. The Mesolithic painting of the five warriors in La Mola Remigia shelter setting off apparently in feather head-dresses, and brandishing bows and bundles of arrows, looks very much more like a raiding than a hunting party. Then there is the famous discovery in the cave of Ofnet in Bavaria of two nests of skulls, one with twenty-seven heads, the other with six. These might conceivably be the relics of ancestor worship, but as each skull had neck vertebrae attached, many of them with marks of cutting, and as, moreover, a very high proportion were of women and

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children, ruthless head-hunting is the more convincing explanation. Among the Nagas of Assam a woman's or child's head was as good as a man's and very much more easily come by. It seems reasonable to assume that as mankind became more numerous in late glacial times, so raiding and petty warfare increased and intensified.

If the use of analogies from surviving hunting peoples must be accepted with caution when the organization and conduct of the larger social units are being considered, it evidently becomes even more hazardous when dealing with the smallest unit: the biological family. Here archaeology can offer no corroborative evidence of any kind, while on the other hand the bewildering variety of forms and customs found among primitives suggests that they may be of relatively recent origin; if the economic and technical development of a people is retarded, a great deal of energy may be expected to go into the elaboration of social forms as well as into its ritual life. Perhaps, then, it is legitimate to guess that among the early hunters the rules and etiquette governing marriage and married life had not yet evolved the burdensome and sometimes repellent complexity found among their descendants.

While modern analogy is obviously worthless for these marital intricacies, it may be helpful in the case of certain more generalized and widespread observances. On the question of polygamy, it suggests that while this may often have been permissible, and even greatly to be desired, the economic realities of the hunting life are likely to have enforced monogamy, except perhaps in favoured circumstances and for specially privileged leaders. As for polyandry, it seems only to prevail where the conditions of life are very harsh. Whatever the theoretical forms of marriage, comparisons suggest that adultery was probably prohibited but often tolerated, and divorce readily allowed by mutual consent. Indeed, the possibility remains that at least during the earlier part of the Palaeolithic Age the idea of lifelong mating had not been formalized, and there were no established marriage procedures.

We are almost certainly on safe ground in using one other general analogy: the bond between mother, father and children would have been very much looser and less exclusive than is usual in the monogamous societies of the modern world. Romantic love is, of course, the creation of high civilization where art and literature play a great part in heightening, even while refining, sexual passions and emotions; but on a much humbler level, it is true to say that primitive people rarely expect marriage to mean close and continuous companionship between the parents, or between father and young children. Sometimes marital customs seem specially designed to keep husband and wife distant and even hostile. But even where monogamous marriage is the rule and affection recognized, nothing like the closed biological family of western civilization would be considered tolerable. Boys and girls, men and women, would resort much with their age and sex groups, playing, working and celebrating with them as a matter of course. And where the hunting group remained small, meals would normally have been communal.

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In particular there would be no close association between a father and his children before the age of puberty. Of all the artificial creations of human society, the idea of the perpetually loving and responsible father of young children is probably the farthest from natural instinct.

The last word in any account of early forms of society must be to insist on the subservience of the individual to his tribe. To judge from the unanimous evidences of surviving tribal societies, the tribe was seen as a timeless procession of the dead, the living and the unborn, attended by all the unseen powers of the spirit world. To this procession of life, which could only be maintained by the proper adherence to its traditions, the individual was wholly subject. Or perhaps it would be more correct to say he was lost in it through total participation. Men and women may have been considerable personalities, without having fully isolated themselves from the consciousness of the tribe. Indeed, the ideal of the free-standing human being was hardly formulated before the Greeks, hardly fulfilled before the Renaissance; for these people it was remote from all experience. They thought, felt, and acted as members of a group, and in this they were daily confirmed by dancing, initiation and all the other rites that held them in bodily and psychic unison.

## NOTES TO CHAPTER V

1. Dr R. M. Berndt and Professor K. Birket-Smith consider that in general little attention is attached today to the problem of the priority of matriarchy or patriarchy. The issue of matrilocal and matriarchal versus patrilocal and patriarchal was the subject of a good deal of unprofitable discussion. Modern British social anthropological work has shown that this crude dichotomy is quite inadequate for any thorough study of descent, inheritance and social status. Professor G. F. Debetz considers that the ape-like ancestor of man entered the stage of labour already as a 'social' animal with strong gregarious instincts. The ever-growing significance of hunting big game, the constantly increasing complexity of making stone tools, the use of fire for heating and preparing food, the use of natural shelters and caves against unfavourable environmental conditions and for storing tools—all this naturally conditioned the development of social ties; consolidated socially, the elementary zoological associations of people that had formed earlier, complicated and differentiated the forms of relations between members of the human herd.

2. Dr K. Birket-Smith points out that initiation does not mean admission to the clan but admission to adult status, which may imply admission to the totem cult where one exists.

3. Professor R. M. Berndt observes that many aborigines draw a distinction between 'physical' and 'spiritual' conception, with the strongest emphasis on the 'spiritual' aspect; they are not alone in this, since in many human societies the 'spirit' or 'soul' is not thought to come into being merely at the moment of conception—i.e. when the bodily substance first begins to take form. This is not to say that they had a detailed and accurate knowledge of the connection between sexual intercourse and conception; but with a number of them, where careful enquiry has been made in their own language, it is clear that some well-established linkage was acknowledged (e.g. the semen forming the child's bones, the mother's blood the child's blood and flesh).

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4. Professor R. M. Berndt feels that the topic of the status of women, in any society, seems to lend itself to exaggerated and emotionally unbalanced comment, in which 'one side' is emphasized at the expense of the other, and the problem is rarely seen in perspective. Aboriginal women were, traditionally, subordinated to men in certain respects; but the converse also held good. Anyone acquainted with this topic should know what sort of evidence to look for in discussing it, and to separate 'fact' from misinterpretation of fact.

5. It is worth noting that many experts hold the view that the 'Sorcerer' of the cave of Trois Frères belongs to the same realm of ideas as the 'lord of the animals'; if this is so, it would not be a man in disguise but a supernatural being exercising power over game, upon whom depends the hunter's success in the chase. See H. Breuil, *Four Hundred Centuries of Cave Art* (Montignac, 1952).

6. The well-known 'bison scene' in the 'puits' of the cave at Lascaux is interpreted in several different ways. It has been given a totemistic explanation and interpreted as an initiation scene [see H. Danthine, 'Essai d'interpretation de la "Scène du Puits" de la Grotte de Lascaux', Sédimentation et Quaternaire (1949), pp. 213–20].

   Mention should also be made of the view advanced by H. Kirchner [see 'Ein archaeologischer Beitrag zur Urgeschichte des Schamanismus', *Anthropos*, 47 (1952), pp. 244–86] that it is connected with a Shamanist ritual. According to this theory the anthropomorphic figure would be a human being (shaman) collapsing in a state of complete ecstasy.

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CHAPTER VI

# MATERIAL CULTURE OF THE PALAEOLITHIC-MESOLITHIC AGE

## DWELLINGS

AMONG the creations of cultural evolution that have made man the most adaptable of species, able to flourish from the Equator to the polar circles, houses and other forms of shelter are, together with clothing, evidently the most important. Birds and some animals are builders and tunnellers, but each species is limited to its own instinctively inherited pattern, whereas man has adapted his dwellings to all kinds of surroundings, all temperatures, all raw materials and also to his own very various demands dependent on taste, habit and economic and social organization. Thus, even while still at a humble stage of development, men will build with tropical leaves, with skins and felt, with twigs, boughs and timbers, with whale and mammoth bones and stone, earth and turf, with ice and snow. Men will build in jungles, on mountain slopes and steppes, by river and sea-shore, on swamps and over water. They will design their houses for a little family or for large kindred and clan groups, as club rooms or for many families to live side by side under one roof; for peace or for war. They will set them singly or in small clusters—but very seldom, so long as they remain hunters, in clusters large or permanent enough to be true villages.

In this context of the Stone Age it is hardly necessary to say that as well as building houses, man has long been glad to accept the very solid shelter offered by natural caves and overhanging rocks or cliffs. It would, however, be unwise to assume that caves and rock shelters were the earliest form of human habitation, for if man first emerged in Africa he was not often in need of solid walls and roof and is likely to have lived very much in the open. It is true that the Pleistocene Australopithecines may have occupied the rock fissures where their bones were found, but we have no evidence that their, and our, Pliocene forebears did likewise, while the remains of one of the oldest known cultures, the Oldowan, have normally been found in conditions suggesting their creators lived in the open. Indeed no sure evidence for cave-dwelling has been recognized in Africa before Late Acheulian times. There is no sign of Africans having used fire before this same period, and it may be that men could not live permanently in caves until they had fire to protect them from marauding carnivores.

Again, it is true that the Choukoutien caves are the earliest known human habitations, but then the chance of occupation litter surviving in caves and

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so making it possible to recognize them as dwellings is immensely greater than it is for exposed sites. Except when extreme cold drove them into caves, men must from the first have roved freely over the open countryside, perhaps in the earliest times making only wind-breaks or light roofs against rain and sun, but later, as will be shown, quite substantial houses.

Caves have a continuous history of occupation throughout later Palaeolithic and Mesolithic times. Indeed, men have taken advantage of this form of free shelter until the present day. In Britain it has been said that there were never so many cave-dwellers as in the Roman period; during its excavation, it proved that one of the Arab workmen had himself been born in the Tabun cave of Mount Carmel where a female Neanderthal skeleton was unearthed.

The Choukoutien caves were inhabited by *Pithecanthropus* during the second glaciation; caves in the Makapan Valley in the Transvaal, in the Cape Province, at Mount Carmel in Palestine and Palmyra in Syria and in Jersey in the Channel islands, gave shelter to late Acheulian man during the last interglacial. After this, sites are too numerous to specify. The Neanderthalers were so much cave men that Mousterian sites in the open are exceptional.[1] Although Europe, and especially south-west Europe, probably has the greatest concentration of caves occupied intermittently throughout later Palaeolithic times, there are long-tenanted caves in many parts of Africa, including the famous Bambata and Elementeita caves in Kenya and a number along the Mediterranean littoral. Many more than are at present known are likely to be recognized in Asia as research develops. In the New World most of the pre-agricultural sites are in the open, but the earliest known culture is named after a cave-dwelling, that of Sandia in New Mexico. Several caves occupied rather later than these, but still in pre-agricultural times, have been recognized in Oregon and Utah.

The name of troglodyte may suggest a being living far from the daylight, but this is not in fact true of the prehistoric cave-dwellers. They maintained the centre of their home life just inside the cave-mouth where shelter was combined with daylight and a ready escape for the smoke of the great fires that were so essential a part of cave existence. The depths were normally visited only for executing works of art and for the magic rites connected with them (p. 188). In selecting a cave-dwelling for bitterly cold winters, Palaeolithic man showed a natural preference for those facing south or westward, and this choice made the terrace so often present outside the entrance a good working place on fine days. There tool-making was often done, and, very probably, skins stretched out and cleansed and clothes sewn. Occasionally, too, the dead were buried outside in the terrace bank. It must be remembered that the type of habitation usually known as the rock shelter was at least as popular as the true cave. This was a living place established under overhanging cliffs or large rocks where, although there were no natural walls, the overhang made a good roof. Neither caves nor shelters have as yet yielded evidence of artificial walls or fences, yet it seems exceedingly unlikely

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that these admirable efficient hunters had not devised at the very least screens of skins to add to the warmth and security of the natural vault.

Nowhere in the world is there so much to encourage an imaginative reconstruction of Palaeolithic life as the Dordogne region of south-west France. In the great limestone valleys of the Dordogne system, and particularly of the Vézère near Les Eyzies, where the rivers have eroded steep, and often overhanging, cliffs, there are scores of desirable caves and rock shelters (Pl. 2). Such dwellings with tools, weapons and all the litter of occupation on their floors, with paintings and sculpture on their walls or in the depths behind them, and with the bones of the hunters themselves buried there, are so numerous that they are sometimes within sight and even hailing distance of one another. Making allowance for the fact that not all were inhabited at the same time, there must often have been a stir of life between them. It is easy, and surely permissible, to picture the formation of hunting parties, visiting by courtship parties, and large gatherings round fires where meat from the communal hunt was being roasted. Sometimes medicine men, artists and other leaders, perhaps horned, masked and clad in pelts, must have made solemn entries to carry out their hunting and fertility rites at the images deep in the rock. At certain times, perhaps at mid-winter to turn back the sun, perhaps in the early spring for the fertility of the game animals, there may have been ceremonies drawing hunters from afar for their celebration. During the hard, bright winter nights there must have been fires making wavering patches of light at point after point along the limestone cliffs.

Cave-dwellers invariably allowed their lost or discarded possessions, their food bones and other rubbish, to accumulate beneath them, often to a depth of several metres and sometimes until the cave became choked up and quite uninhabitable. With the encampments in open country which, as we have seen, our ancestors certainly used over as long a period as caves, there are no such favourable conditions for preservation. The chances of their surviving in recognizable form over many thousands of years are slender indeed. The Acheulians had a preference for encampments beside rivers and estuaries and lakes. A large proportion of the flint implements found in river gravels and other natural deposits are likely to have been derived from exposed living sites of this kind, having been carried away by streams, floods or soil movement. Occasionally, however, a sufficient concentration of occupation material has remained in one spot to mark it with some certainty as the site of an encampment of some kind even if no traces of any structure remain. The best defined Lower Palaeolithic site of this kind is Ol Orgesailie in the Kenya Rift valley, where the rise and fall of the level of the lake by which it was situated have preserved much of the domestic rubbish under layers of silt. Here Acheulian hunters had left behind them on the floors of flimsy huts, wind-breaks or whatever form of shelter they may have used, astonishingly great quantities of their hand-axes and cleavers, and the chipped stone



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balls thought to have been used to make bolas. They had thrown down their food bones where they ate (as was of course the universal practice), and these prove them to have lived mainly off wild pig, zebra and baboon. None of the bones showed the mark of burning, nor was there any trace of hearths at Orgesailie; it seems possible, therefore, that in a warm climate men did not as yet invariably make use of fire. Another well defined lake-side Acheulian settlement was at Torralba in Spain. Here, however, the hunters had command of fire.

No post-holes or other marks of buildings were preserved at this site, although the extreme concentration of flints and bones suggests that they existed. The earliest actual remains of man-made buildings date from Upper Palaeolithic times and come from Czechoslovakia, southern Russia and Siberia. All of them appear to have belonged to mammoth hunters of Gravettian culture, whose highly specialized way of life obliged them to live in caveless country even during the winter season. One group of three huts lying within a few hundred metres of one another is at Vestonice on the lower slopes of the Pavlov hills in Czechoslovakia, a site long famous for its mammoth bones, and for Palaeolithic carvings and models (p. 194). All three were set near small springs and on a specially prepared floor hollowed from the slope of the hill; not very much more can be reported of the third of these houses as it has only been partly excavated, but the remaining two, standing 80 metres apart, are of very great interest. One of them was roughly oval in plan, measuring about 15 by 9 metres and floored with limestone grit. Five hearths in shallow depressions ringed with flat stones lay along the centre line, while small pits that may have been for storage had been dug just inside the house wall. No certain remains of post-holes or roofing material were found, and it is possible that this building never possessed a substantial roof, but was protected by a series of wind-breaks or lightly built shelters. Quantities of stone and bone tools and some personal ornaments were scattered round the hearths, while near the central one flint-working had been carried on so intensively that over a thousand flakes had accumulated within a space no more than a metre square. This long house with its several hearths is judged to have been the communal dwelling of a family hunting-group or clan.

A large kitchen midden was discovered along the banks of the rivulet flowing near the hut. This may formerly have been a marsh where the bones of mammoth, reindeer, horse, fox and wolf had been thrown and allowed to sink into the slime. Also near the hut was the grave of a forty-year-old woman who had been buried in a manner fitting for the wife of a mammoth hunter. She had been laid in a shallow grave, strewn with red ochre supplied with tools and then covered with the great bony plates of mammoth shoulder-blades.

The other hut was smaller, nearly circular and with the floor partly sunk into the hillside in such a way that a low roof would probably have followed

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the line of the slope. The roof had been supported on uprights about 12 centimetres in diameter and perhaps slightly inclined inwards towards the centre; they were secured in their rather shallow sockets by collars of large stones, and further supported by internal struts. The roof itself appears to have been made of branches, grass and earth, and perhaps covered with hide and weighted with mammoth bones. A certain amount of ash, bones, and other refuse had been thrown on top. The whole hut was enclosed in a circular wall of limestone and clay 6 metres across. This must be the most ancient true wall built by human hands known to survive on earth. More remarkable still is the hearth in the middle of the hut which is surrounded by the overhanging edges of a vaulted structure of the same material as the wall, and evidently the base of a beehive-shaped oven or kiln. Its floor was covered with a thick sooty layer, and the inside of the kiln walls was burnt to a reddish colour. The layer of soot contained more than two thousand clay pellets, some of them showing finger marks, and mingled with them some fragments of the clay modeller's art—the heads of two bears and a fox, some unfinished statuettes, and legs broken from animal figures. In short, it seems that this was a kiln, the oldest ever to have been discovered, and that it was used to harden clay figures of the kind for which Vestonice is already well known.[2] Furthermore, the excavators believe that this was no ordinary dwelling house, but perhaps the quarters of a Palaeolithic medicine man, the sacred den where he shaped and hardened the images of beasts and of women to be used in his hunting and fertility rites.

The charcoal from Vestonice suggests a cold type of coniferous forest, and the animal remains, too, are of a kind to be associated with extreme cold, perhaps with tundra conditions. Probably the dwellings there were inhabited near the beginning of the last phase of the Würm glaciation.

Another comparable, but slightly earlier, mammoth-hunters' encampment in Czechoslovakia is at Ostrava-Petrovice on the left bank of the Oder (Fig. 14). Here there had been three oval huts from 6 to 8 metres long and each with a pair of hearths set on the middle line. In one of the huts, lying under a mammoth molar, was a miniature torso of a woman carved in haematite, and more realistic than most of the Gravettian Venuses. Domestically the remarkable thing about this settlement was the use of coal for the fires. The Ostrava coal measures come to the surface quite close to it, and the hunters had learnt enough about the properties of the material to prefer it for fuel to the scanty supply of pine logs.

The medicine man's hut at Vestonice is unique, but the other Czech dwellings are sufficiently like some of those in the Black Earth country of south Russia to show that these mammoth-hunters of Gravettian culture followed closely similar ways of life throughout wide territories. These loess-land dwellings usually stand on the banks of a great river, and on the present somewhat insufficient evidence appear to fall into two main types, one sunk well into the ground and remarkably like the winter earth-houses still used

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in circumpolar regions (for example, by the Kanchadals of north-east Siberia), while others were tent-like and comparable with the summer tents of the Canadian Eskimo.

The best specimens of the earth-house type are the group of six elongated rectangular dwellings, measuring about 3 by 12 metres, uncovered at Timonovka on the Desna river near Briansk. Here the floors might be sunk as much as 3 metres into the ground and the huts were entered by a ramp,

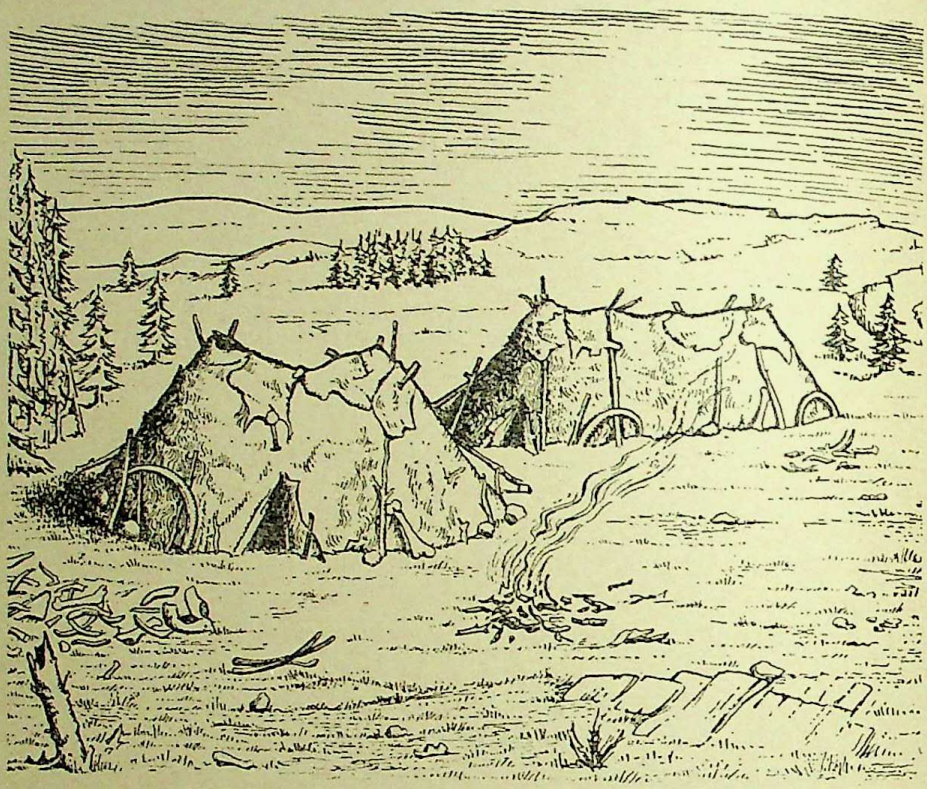

FIG. 14. Upper Palaeolithic houses at Ostrava-Petrovice, Silesia. (Reconstruction.)

sometimes at one end, sometimes in the middle of the long side. The vertical walls seem to have been lined by a timber revetment, and the roofs to have been made of logs laid across the trench and piled with the excavated soil and kitchen refuse. One or more hearths were sited near the entrance, but in one instance the problem of getting rid of the smoke was apparently met by constructing a hood or chimney of clay-covered bark. Fires, however, were also lit in the open; both hearths and flint-knapping floors were found near the settlement. These subterranean houses, lit by stone lamps, must have been snug refuges in winter and have offered a welcome haven from arctic winds.

The Russian dwelling most nearly comparable with those at Vestonice was found at Kostienki on the River Don. It, too, was some 15 metres long,

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with a floor slightly hollowed into the ground and with hearths set along the axis. Although the excavators report post-holes to support a roof the evidence is doubtful, and it may be supposed that here as at Vestonice there was not a substantial or continuous roof but perhaps several shelters or tent-like coverings of skin. There may have been other yet longer communal dwellings of this kind at Kostienki. So successful were the mammoth-hunters who lived there, that the site has long been famous for an abundance of mammoth bones and teeth; as early as the eighteenth century they interested Peter the Great enough to make him order an investigation.

There was another long, roughly rectangular house with slightly sunken floor and hearths, and quantities of mammoth remains at Pushkari, on the Desna, but more interesting is a dwelling near the Don, that of Gagarino close to Lipetsk. This was more clearly of tent-like construction. It had been an uneven oval some 5 metres across with the floor sunk to a depth of half a metre, and mammoth tusks and stone slabs lying round the edge of the hollow. These were almost certainly used to weigh down the edges of skins which may have been stretched over a framework of sticks such as those used for their summer tents by the Canadian Eskimo. When camp is shifted, the tents are removed and the weights left lying in a ring. It is a striking fact that the tent-houses of mammoth-hunters found far to the east by the Siberian Lake Baikal (p. 86) were of much the same type, apparently with mammoth phalanges for weights, while away to the west the reindeer-hunting Hamburgians of Schleswig-Holstein favoured the same kind of dwelling, using stone blocks to take the place of bones as weights. The dozen or so habitations of Palaeolithic men recognized between Moravia and Siberia have been described in some detail, for poor though their remains are, and difficult to interpret, they gain distinction as the first known examples of domestic architecture. A dozen huts and houses for the whole of the Old World—this can represent only a small fraction of the total number raised (or sunk) during Upper Palaeolithic times. Nevertheless the human population was still so very sparse that, except in a few unusually favoured regions, these diminutive centres of human life must have been thinly scattered and isolated almost beyond our comprehension. It is worth giving some space to these few pioneer buildings as the harbingers of the countless millions of houses that by the end of this history will have sprung up to embellish and to disfigure the earth.

For the Mesolithic Age again, nearly all the evidence for artificial houses comes from Europe. A larger number of sites is known, but it is true to say that the huts represented generally appear to have been smaller and flimsier than those of the preceding age. The growth of forest and thickets vastly increased the amount of material available for making shelters, but shelters of a kind even less likely to survive (except in bogs) than those built when wood was very scarce. Nor did the warmer climate demand the digging of earth-houses.

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Where they could, Mesolithic builders chose sites on sandy or gravelly soils where the vegetation would have been light. But in Europe at least, the post-glacial millennia saw much bog formation round the edge of glacial lakes, and the Mesolithic people fishing, fowling and hunting in this kind of country developed some skill in camping on marshy ground. At Duvensee near Lübeck Maglemosians inhabited a knoll set amid the bog, laying birch-bark floors and making hearths of sand on them where fires could be lit in safety. At Star Carr, Seamer, in Yorkshire, other Maglemosian deer-hunters and fishers, camping among reed swamps on the edge of a lake, had made

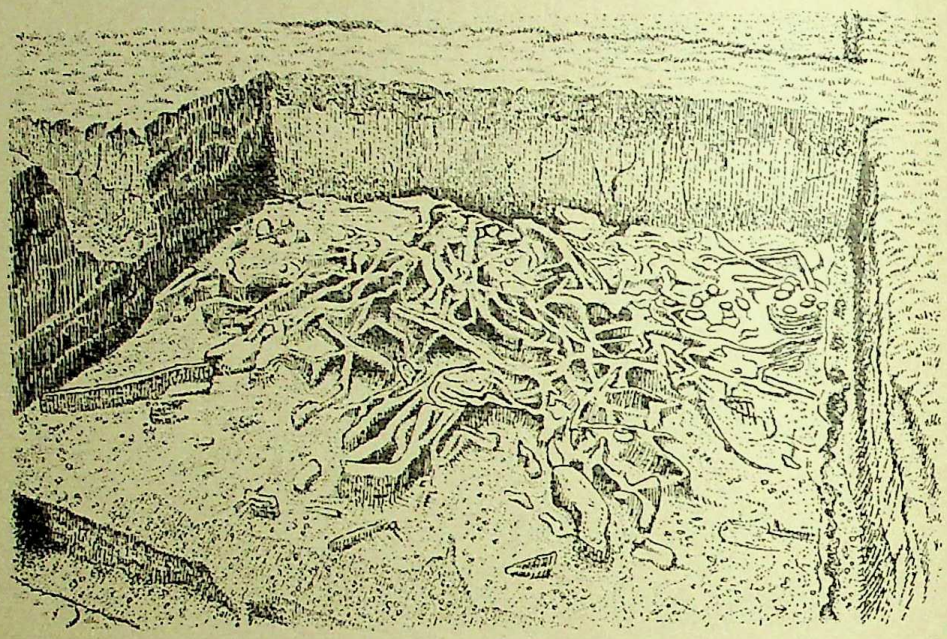

FIG. 15. Mesolithic dwelling platform, Star Carr, Yorkshire, England (after J. G. D. Clark).

a dry platform with birch brushwood, including some quite substantial trunks (Fig. 15). At neither of these sites, despite the preservation of wood, was there any sign of huts, and it can only be guessed that tents were pitched on them. On the other hand on the bog of Aamosen on the Danish island of N. Zealand squarish huts floored with birch and pine bark were detected. Walls and roof appear to have been made with slender uprights set into the subsoil round the floor and pulled together at the centre. This same kind of light construction was also detected at Bokum in Hanover, though here the plan of the hut was an irregular oval. Probably it was used at many other sites where nothing has survived beyond slightly sunken floors, hearths and occupation rubbish. Wattle and daub may have made the covering of one hut in Belgium, but all the evidence suggests that true frame construction was not used in Europe, nor so far as is known anywhere else, until the Neolithic period.

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Sometimes Mesolithic huts are found in small groups, as for example on the English Pennines (p. 124) and at Farnham in Surrey; small seasonal settlements of this kind were probably usual, but when we come to one of the size of that at the edge of the Federsee moor in Württemberg with as many as thirty-eight huts (again constructed of branches and with sunken floors) it is necessary to be cautious; this was evidently a popular camping site, revisited year after year. It may well be that not all the huts were occupied at one time. It is unfortunate that almost nothing is known of the dwellings inhabited by the Ertebølle folk (p. 99) whose steady food supply enabled them to avoid seasonal migration.[3] Although their huge kitchen middens survive to bear witness to their vast consumption of sea foods, and particularly of shell-fish, of the houses they must have inhabited through the centuries no trace remains.

## FIRE, COOKING AND FOOD

The domestic arts practised in these caves, shelters, huts and houses were not highly developed, although here as in other spheres there was certainly a conspicuous increase in skills in later Palaeolithic times. Those which called for special tools will be described presently, but here in direct relation to the dwelling places something should be said about fire, food and cooking.

It has already been insisted that the control of fire was one of the first and most important of human achievements, though warmth, protection, and even the hardening of wooden implements probably all preceded cooking among its uses. It may well be that the *Pithecanthropi* of Peking, the earliest users of fire at present known, may not have made fire but only maintained it when it had been naturally ignited. Among modern primitives all possess fire-making appliances except the Andaman islanders, who have either lost or never possessed the art. Many, however, do their best to save the labour of kindling by keeping their fires going—sometimes even on a clay hearth laid on the bottom of a canoe.

When we reach the Acheulians, it seems much more likely that great fires such as those that burned in the Tabun cave on Mount Carmel or in the Cave of the Hearths in the Makapan valley were artificially kindled. In the present stage of knowledge Asia is in the van of fire-making with the Choukoutien hearths dating from the second glaciation; Europe follows with evidence of fires for the second interglacial at such mid-Acheulian sites as Torralba, while Africa lags behind with no sign of fires (and no true cave-dwellings) before Late Acheulian sites of the last interglacial period.

There are two principal ways of making fire, though each has many variants. One consists in making sparks by percussion, the other in friction between two wooden surfaces, creating a fine wood dust that finally kindles enough to light the tinder. The only solid evidence of fire-making in Palaeolithic or Mesolithic times is for the first method, some cave-dwellers having made a strike-a-light from flint and a lump of iron pyrites. The friction

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methods include the fire-plough in which a piece of hard wood is rubbed to and fro in a furrow in softer wood, the rather similar fire-saw in which a sharp-edged stick such as bamboo is sawed across a slit, and the fire-drill where a hard pointed stick is rotated in a socket. The drill may be twirled between the palms but is made much more effective if rotated by means of a thong, cord or bow-string looped round it. It seems certain that one or more of these techniques would have been perfected before the end of the Mesolithic period. Here is an invention likely to have been made independently in different regions, always with variations determined by the nature of the woods available.

As for fuels, wood was of course usual (two kinds of pine, spruce, willow and birch were identified at Vestonice) but in treeless tundra bones were sometimes resorted to, as they were by the mammoth-hunters at Kostienki. The use of coal at Petrovice, the first known in human history, has already been described. The stone lamps burning fat used in the earth-houses and by cave artists (Fig. 25) may well have served to give warmth as well as light, as they do among the Eskimo.

Fire was certainly used for roasting meat already in Lower Palaeolithic times, but probably, like their modern successors, the ancient hunters always ate some of their meat raw. It is often suggested that boiled food was unknown before the invention of pottery, but it would have been quite possible for Upper Palaeolithic women to have learnt how to boil in leather vessels by the means, often employed in later prehistoric times, of dropping in hot stones. Since the discovery of the Vestonice kiln, it has even become rash to assume that the cooking oven was never used at this time, although it must have been most exceptional as no signs of it have been detected in any cave-dwelling.

As for food, the subject is too vast to be treated in any detail. The quest for food was early man's main preoccupation and its variety enormous. Between the Equator and the ice-caps, between the extremes of Pleistocene climate, the range of foods offered by the animal and vegetable kingdom is beyond description, while man himself was as nearly omnivorous as any animal can be. It may be supposed that fruit, roots and perhaps insects were eaten in much greater quantities when and where the climate was warm, while flesh must have been consumed on a huge scale by the European hunters of the last Ice Age. In the '*Zinjanthropus*' horizon in Oldoway Gorge were the bones of many creatures which had apparently been consumed by this hominid or by his hypothetical destroyer (p. 40). They included those of lizards, frogs, birds, rats and mice. Of the giant species of pigs, sheep, cattle and giraffe prevalent at the time only the young seem to have been eaten. The *Pithecanthropi* ate a large proportion of venison, and so also did the Acheulians on Mount Carmel, while such specialized reindeer-hunters as the Magdalenians must have had a surfeit of it. Indeed, the wide range of the many species of deer, antelope and gazelle must have made venison

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one of the most important foods of pre-agricultural times. The Acheulian hunters in Kenya have been shown to have eaten pork as well as zebra and baboon; on Mount Carmel in addition to a basic diet of venison (mostly deer and gazelle), hippopotamus and even tortoise varied the meals. Communities of Middle Palaeolithic culture living in the Huangho valley in China enjoyed large quantities of ostrich eggs.

The excellence and variety of food enjoyed by the successive Upper Palaeolithic hunters of Europe was, indeed, most remarkable. They had an abundance of wild cattle and horses, pigs, bison, ibex, red deer, in the rather warmer phases, reindeer and mammoth predominating during the arctic periods when tundra returned. But in addition to flesh they also ate fish and fowl; arctic grouse and ptarmigan, salmon, pike, trout, bream and other fresh-water fish. In America the diet of the early hunters was comparable, allowing for the differences in the game available. Mammoth and bison were important food animals, as were the camel and the wild horse. The huge ground sloth was hunted in some regions, and so too, before its extinction, was the mastodon. Hearths uncovered in Texas, where fires were probably burning about ten thousand years ago, in addition to the remains of most of these large game animals, yielded also those of coyote, prairie dog and rabbit; there were also mussel shells and hackberry seeds. Among the peoples belonging to what has been called the Palaeo-western tradition (p. 94) the diet would have included a considerably higher proportion of small creatures as well as of wild plants of many kinds.

With the forest growth of post-glacial times Mesolithic man, so far as Europe is concerned, experienced a noticeable change of diet. Not only were the reindeer and mammoth entirely replaced by red deer, long-horned cattle (*Bos primigenius*) and other forest species, but the amount of sea-fish, shell-fish and birds consumed must have mounted sharply, especially in the summer months. The diffusion of the bow, followed by specially designed fowling arrows (Fig. 13) increased the number of birds available for food. The fortunate survival of one picture among the east Spanish rock paintings, showing a woman who has descended a cliff to reach a wild bees' nest,[4] proves to us that honey was eaten where conditions were warm enough for it to be obtainable.

Although the proportion of meat and hence of protein in the diet of the ancient hunters would normally have been much higher than among agriculturalists, vegetable foods must always have been eaten to maintain health. Though vitamins were not discovered before the twentieth century, the need for them was empirically recognized from the earliest times. As roots, fruits and leaves normally decay without trace, our knowledge of what was eaten in this way is very slight. Mention has already been made of the hackberries gathered by the *Pithecanthropi* at Choukoutien; hazel nuts were eaten by Palaeolithic man in Europe, and in quantity by his Mesolithic successors; walnuts, wild pears and the seeds of water lilies have been found in Meso-

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lithic middens in different parts of Europe. It can be taken for granted that these odds and ends which are all that are now known to us represent a very considerable consumption of vegetable foods gathered by the women and children to supplement the meat brought home by the men. It has been suggested that the reindeer hunters may have eaten the half digested mush from the stomachs of the deer—a rich source of vitamins still appreciated by the Lapps and Siberians.

Towards the close of the hunting ages the consumption of grasses and other seed plants either wild or semi-cultivated probably increased in some regions, as it certainly did, for example, among the Natufians of Palestine. This people harvested enough grain to justify making mortars for grinding it. They may be supposed to have eaten the meal both in some porridge-like form and as unleavened bread. With this cereal element in the diet becoming so considerable, we are on the threshold of an agricultural life.

## DOMESTICATION OF THE DOG

There is a tendency, not altogether mistaken, to regard the Mesolithic period as a tardy epilogue to the Palaeolithic, an interim period when in most regions mankind was, as it were, waiting for the coming of farming to change the whole basis of life. Yet progress was made during Mesolithic times even in regions remote from the cradlelands of farming, and in one development in particular it was quite clearly looking forward to the Neolithic Age and not backwards towards the Palaeolithic. The domestication of the dog by Mesolithic man was not of great importance in itself but of very great interest as a preliminary advance towards what was to come.

How man came to gain control over this first of the wild animals to be drawn into his social orbit is as much disputed as is the species originally involved. Hunting peoples are inclined to make pets of wild animals; some of the Australian tribes tie them up in their camps, and wallabies, opossums and, more significantly, dingoes may become quite at home among them. This friendliness between one form of life and others, particularly as manifested in the overspill of maternal affection in woman, may have contributed to the domestication of the dog. But probably the most effective advances were made not from man's side but from the dog's. If wild dogs of a species small enough not to be dangerous began to frequent camps to pick up offal and discarded bones, they would have been more than tolerated for their services as scavengers; then special scraps would have been thrown to them, they would have been petted, and gradually turned into fully domesticated watchdogs and companions. According to this view these homely functions came before the dog was trained to take part in hunting, while his skill in herding could, of course, only have been fostered with the advent of farming. It still remains possible, however, that from the very beginning of their association dogs joined men in the chase, following the more intelligent species in the hope of pickings at the kill. This interpretation of events would

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gain some support if it were proved that the original wild species to be tamed was the smaller breed of southern wolf, the candidate which on the whole seems to be the most promising.

True domestic dogs have been identified on Mesolithic sites in several places; among the Tardenoisians in Brittany and the Maglemosians in Denmark. A dog owned by the Palestinian Natufians seems to have had a jackal-like ancestry.[5] The earliest European breed seems to have been fairly small and of a generalized form most comparable to a chow. It has been named *Canis familiaris palustris* because it was first identified in Swiss lake-dwellings of the Neolithic Age. It shows the reduction in size and in length of muzzle that was to follow domestication in the case also of the food animals. On the other hand the earliest dog remains from the Belt Cave (p. 223) were those of a very large animal.

## THE DEVELOPMENT OF TOOLS AND WEAPONS

The shaping of tools has been generally adopted as the criterion of human status because among the fossil remains that provide our only other means for recalling the emergence of our kind it is impossible to make a dividing line between man and primate ancestor. The size of the brain relative to that of the body, though useful as a rough indicator, will not do as the final distinction. Tools not only offer a proof of mental concentration with at least some slight skill and forethought, but, when they are of stone, possess the supreme advantage of durability. Therefore both theoretically and for expediency the dictum that manufacture maketh man is a sound one.

A number of other creatures use tools—insects, birds and mammals. Among the primates a baboon will pick up a stone to kill a scorpion and also deliberately dislodge scree and rocks on a hillside to bombard pursuers. Chimpanzees in captivity have been known to join sticks together to make a longer one, even biting the end of the smaller piece to make it fit the socket. This is the nearest approach to tool-*making* to have been observed among other species than our own, but such essays seem only to be made when there is an immediate objective in view, and furthermore have never been known to occur among apes in their natural surroundings. The shaping of even the crudest tool in advance of any particular need demands mental powers nearer to conceptual thought and an imaginative realization of the future.

It has already been suggested that the immediate predecessors of man must have attained to a tool-using stage. The next stage, achieved by the first hominids, was distinguished by the intentional but haphazard manufacture of tools. Man had become a tool-maker, but possessed no mental pattern book to enable him to repeat standard forms designed for definite purposes. This second stage on the path of technical progress is well represented by the Oldowan culture with its pebbles broken into rough edges and points, and again by the culture of the *Pithecanthropi* at Choukoutien.

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Among their descendants in eastern Asia this haphazard type of manufacture lasted immensely longer than in the more progressive parts of the world (p. 72).

The third stage beyond tool-using and haphazard tool-making was first most clearly achieved by the creators of the Abbevillian-Acheulian tradition: this was characterized by the production of a standard implement of well-defined form but very little specialized in function. The fully evolved hand-axe with its point, its broad, cutting base and straight-edged sides, its weight and clubbableness, could serve all the simple needs of Lower Palaeolithic life —it could pierce, dig, cut, stun, or serve as a missile, all after a fashion with the lack of full efficiency that goes with unspecialized design. Even among the Abbevillians and Acheulians, however, there was evidently some slight specialization of function, for the flake tools used side by side with the hand-axes may be presumed to have had their own uses, perhaps for cutting and scraping where a keen edge was necessary. Furthermore it must be remembered that more effective missiles and narrower points than those provided by the hand-axe were probably obtained in wood.

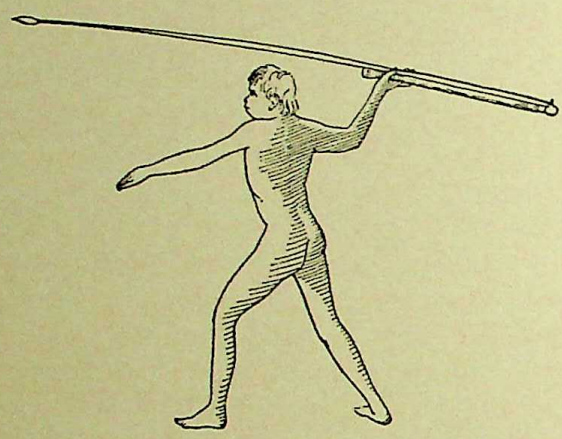

FIG. 16. Spear-thrower in use (after Linton).

The Lower Palaeolithic flake cultures, best represented by the Clactonian, included no tool form so regularly standardized as the hand-axe, yet, as will be shown, the method of flaking was consistent and fairly distinctive. It has been suggested, though with insufficiently exact justification (p. 73), that these flake cultures were better adapted to existence in conditions of extreme cold. It is certainly true that none of their tools appears to have been serviceable for digging up roots or grubs, a job for which the pointed hand-axe was probably used in warmer climates. Instead flake tools of the Clactonian type would have served very well for cutting up carcases and scraping skins. It will be recalled that the oldest wooden implement known to us, a sharpened spear-point, was of Clactonian handiwork.

In the flake-tool developments succeeding the Clactonian there seems to have been a continued emphasis on the same function of dealing with carcases and skins. As we shall see, in these Levalloisian and Mousterian cultures progress does not show itself so much in functional specialization as in improved techniques of manufacture. In the final stages of the Acheulian the hand-axe became so small that its usage must have changed considerably.

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In this period we begin to find the spasmodic appearance of tools made on long flakes already approaching the blades that were to dominate the technology of the Upper Palaeolithic peoples.

In the Upper Palaeolithic Age man began to make the tool fit the task with an altogether new precision. There was also a sudden increase in the tempo of change. Among tools made upon flint blades, the knife was of the utmost importance, while scrapers were made in a wide range of standard forms designed for particular purposes. The invention of the chisel or burin, the gouge and awl made possible the development of working in bone and antler that was another important element in the technical advance of the Upper Palaeolithic cultures. The repertory of bone implements advanced from simple spear-points to barbed spears and true harpoons, fish gorgets and (with the Magdalenians) to the eyed needle. Burins and gouges and awls are of great historical interest in that they are the first implements designed not for direct use but to make other tools; with them technology is gaining depth. They were also the first tools to be used for purposes that were not in our sense practical—for carving and engraving works of art.

Most significant of all the material achievements of Upper Palaeolithic man was the invention first of the spear-thrower (Fig. 16) and then of the bow and arrow, the one using the principle of the lever to increase the efficiency of human muscles, the second the more advanced principle of the concentration of energy. The possession of such long-distance weapons enormously increased the effectiveness of hunters who had to kill swiftly-moving game in country where good cover was scanty or absent.

The Mesolithic peoples of Europe made further useful additions to the equipment of the chase, particularly for the fishing and fowling that formed a considerable part of their economy. In addition to nets and fish-traps, they invented the bone fish-hook as an improvement on the gorget, an effective perforated harpoon, complex fish-spears and arrows with various types of bone and flint heads specially designed for shooting birds (Fig. 17). But the most valuable achievement of the more northern among the Mesolithic peoples was certainly the perfection of the heavy hafted axe and adze which enabled them to fell trees and develop carpentry, including the shaping of dug-out canoes and paddles.

Apart from these various devices that the Mesolithic hunters contributed to the world, they made a drastic technical change that was of no very lasting importance. This was, of course, their adoption of multiple settings of small and sometimes minute flints both for cutting edges, points and barbs.[6] The finest of the geometric microliths called for most delicate craftsmanship. The practice of setting microliths in projectile heads was maintained by the earliest American Eskimo. Towards the very end of the period, in regions adjoining the cradleland of agriculture, microlithic implements looking forward to the coming age begin to appear—such as the reaping knives

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used by the Natufians.[7] The northern forest peoples, too, learnt how to make polished and perforated tools of stone.[8]

This brief history of man's development of his tools from the first tentative breaking of pebbles to the skilled manufacture of a wide range of specialized equipment at the end of the hunting age must be followed by some account of the technical methods involved and by a description of the leading tool

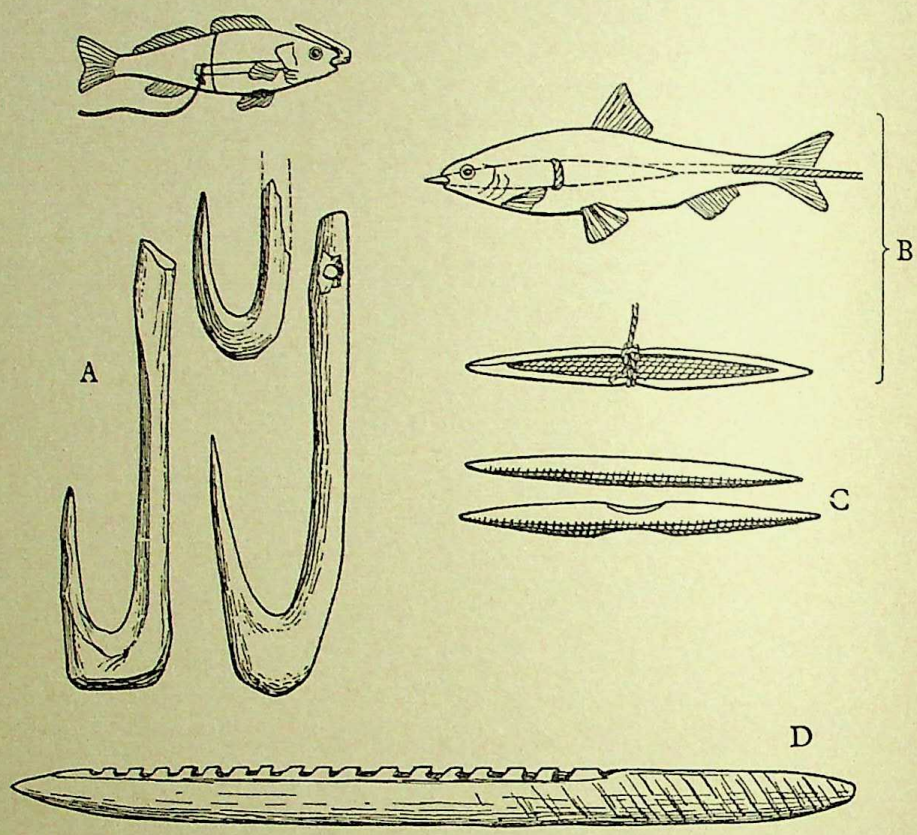


FIG. 17. Mesolithic fishing gear and modern comparisons. A: bone fish-hooks of the Maglemosian culture, showing possible method of securing bait (scale 2/3); B: modern Finnish gorgets; C: gorgets from lake-side village, Switzerland (scale 1/1); D: Maglemosian leister prong from the bed of the North Sea (after Singer).

types characterizing all the many cultures of Palaeolithic and Mesolithic times.

### THE WORKING OF FLINT AND OTHER STONES

Flint, a nearly pure silica, together with the volcanic glass known as obsidian, undoubtedly offered the best natural material for tool-making at all generally obtainable by prehistoric man. Harder than steel, they are fine-grained and remarkably homogeneous and can therefore be most accurately worked by various methods of fraction. Chert, more widespread throughout

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the world than true flint and very commonly used for implements, is also composed of silica, but very much coarser-grained and more faulty. The ancient tool-makers used these stones wherever they were available, but were sometimes reduced to such intractible materials as schist, granite, quartzite, or fossilized wood. Once the manufacture of stone implements by grinding and polishing became a common practice among the Neolithic peoples the tough, igneous rocks came into their own, although flint and obsidian remained the only good substances for delicate work.

If a faultless piece of flint is struck vertically with another stone the fracture can be perfectly conchoidal, the lines of fission radiating outwards from the point of contact to form a cone like a limpet-shell. If the blow is struck obliquely (as in tool-making it invariably is) then only half or less of the cone will penetrate the flint, forming the little swelling usually known as the 'bulb of percussion' at the base of the detached flake and leaving a corresponding hollow on the main body of the flint. After thousands of generations had employed more or less random striking, man learnt that he should direct his blow at a point near the edge of the block at an angle of about 120 degrees to the direction he wanted the fracture to take. Two main methods of procedure could be followed: either the detached flake could be worked up into the implement or the implement could be formed from the main block, flakes being detached to shape and trim it. It has been seen that this distinction between flake and core tools is a very significant one for the classification of Palaeolithic cultures.

At first the blows were struck with another rounded stone; the earliest pebble tools were made with random blows of this kind, while the hammer-stone technique had been more fully mastered by the Abbevillian hand-axe makers. It might sometimes be supplemented by a second method by which instead of the flint to be worked being struck with a hammer-stone, it was itself hit against a much larger immovable anvil-stone. This anvil technique was particularly effective for detaching very large flakes.

The great disadvantage of both methods was that the shrewdness of the blow of stone on stone produced large bulbs of percussion on the flake and correspondingly deep 'negative bulbs' on the core. The deep depressions thus formed along the edge of a core tool made it impossible to keep the line at all true; in all Abbevillian hand-axes the edges are more or less jagged and irregular. The discovery that made possible the smooth workmanship of the best Acheulian examples was that the bulbs of percussion were greatly reduced if instead of a hammer-stone a cylindrical bar of a softer material was used. Experiments have shown that the limb bones of horses and other sizeable animals are ideally handy for the purpose, but as few such hammer-bones have been found even on sites where the cylinder hammer had undoubtedly been employed, it is assumed that branches of tough wood with the bark removed were more often used. Not only does the yielding surface spread the blow through a wider line of contact, so flattening the

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bulb, but it can be directed exactly on the edge of the tool instead of at a little off it. The blows are made quickly and lightly from the wrist, and further control is obtained by pressing the fingers against the point where the flake is to be detached. Thus it must be recognized that to achieve the smooth flaking, straight edges and true form of the finest Acheulian hand-axes men had already accumulated considerable knowledge as well as skill in the niceties of stone-working. It was, of course, knowledge empirically acquired, and the process of learning took some quarter of a million years.

The next technical innovation affected the flake cultures. The Clactonians and Tayacians had obtained their flakes by the use of hammer-stone or anvil; the Clactonians with their preference for large, coarse flakes must commonly have employed the anvil method. The flakes were detached freely from the core, and if further shaping was required it was done subsequently as secondary trimming or 'retouch'. Work of this kind could be done very quickly and the resulting tools were neither elegant nor closely standardized. The new device characterizing the Levallois culture was so to prepare the block of flint that a perfect and completed flake tool could be struck off with one carefully directed blow (Fig. 18). One side of the block was flaked all over to form a low, convex surface usually oval in outline; at one end cross flaking made a flat platform roughly at right angles to the worked face. By striking this platform correctly the greater part of the convex surface could be removed as a symmetrical, oval flake tool, the upper side fully worked, the underside formed by the flake surface, and the butt showing portions of the transverse flake scars of the striking platform. This is the true Levallois flake, and the block bearing the large scar of the flake is known as a tortoise-core. It is likely that for the crucial blow to detach the laboriously prepared flake, the Levalloisians used a bone or wooden punch which was applied to the platform and then struck with hammer-stone or wooden cudgel.

This efficient Levallois technique was perfected in Europe during second interglacial times, but at what is thought to have been a considerably earlier date the early Acheulians of South Africa had developed a comparable method for making hand-axes. They detached a flake large and thick enough to be turned into a hand-axe by a little further working on the underside; the flake was, in fact, being used to simulate a core. These two far separated occurrences of the tortoise-core method may perhaps represent an early instance of that surprisingly rare phenomenon: independent invention. A comparable form of flake hand-axe is found in south and central India.

No very significant technical invention in stone-work was made during the last interglacial phase—although it may well be that somewhere pioneers were beginning to experiment in the blade flaking methods that were to be fully developed in the Upper Palaeolithic cultures. The thick, heavy flakes of the Mousterian culture which suggest its descent from the Clactonian and seem well suited to the hands of the squat, thickset Neanderthal men were trimmed in a manner sufficiently distinctive to be worth mentioning. The

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edges of their characteristic points and cutters were chipped with blows directed so much into the implement that instead of the flakelets peeling smoothly off they drove into the flint and broke off short leaving a tiny vertical face or step at the tip of each scar. This is known as step flaking.

Many of the new departures in stone tool-making that form so important an element in the great forward movement of the Upper Palaeolithic Age were dependent upon the discovery of a new way of striking flakes. As the whole group of Eurasiatic cultures get their general name from these blade flakes their manufacture demands full description. The distinguishing features of the blade from which so many specialized tools were made are the narrowness and the parallel sides, suggesting the steel of a modern table

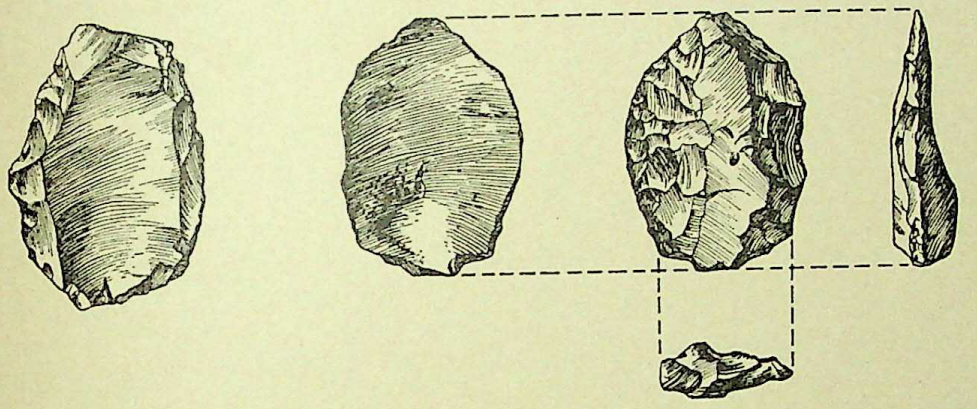

FIG. 18. Manufacture of the Levallois flake. *Left:* tortoise-core. *Right:* the detached flake, scale 1/3 (after Singer).

knife; a common measurement for a blade would be four inches long by barely an inch across. It should be remembered, however, that exactly the same kind of flaking continued into the Mesolithic repertory, though now on a miniature scale.

To make good blades (Fig. 19) it was often necessary to take a nodule of flint and break it cleanly across, a fracture that can best be secured by striking a projecting knob in a precise and cunning manner. To judge from modern analogy, the half-nodule was then rested on the knapper's thigh with the fractured surface uppermost. Blows were then delivered round the edge while at the same time the flint was rolled in such a way that the flakes almost peeled off. A number of these blows delivered all round the block would soon remove the rough outer cortex and leave a fluted or multiangular centre, conical or cylindrical, and of the purest unweathered flint. The process of peeling off could now continue with perfect blades as the result. The blows could either be struck at the junction of two of the flake facets to produce blades with a single central keel sloping down to the sharp parallel edges, or they could be struck at the centre of a facet to detach the whole of it

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together with half of those adjoining on either side, so making a blade with a flat centre and bevelled edges. These slender, keen-edged blades were now ready as the blanks from which many typical Upper Palaeolithic tools could be made.

A new technique capable of the finest of all flint work came to the fore in Upper Palaeolithic times and is seen at its best in the Solutrean; this is pressure flaking, used for secondary trimming on blades and other flakes. In its simplest form it was used both to form a steep strong working edge for a scraper or to blunt one edge of a blade to make the back of a knife on which the finger could be pressed without hurt. The need was, in fact, to remove a number of minute flakes evenly along the original sharp flake

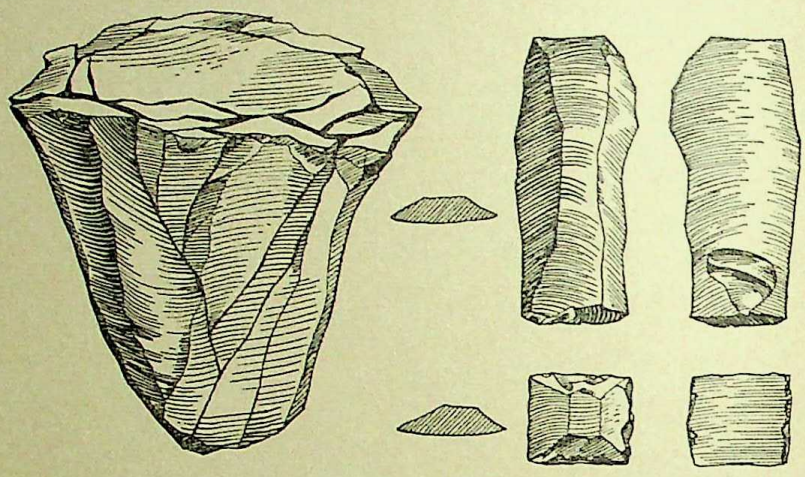

FIG. 19. Manufacture of flint blades (modern), Brandon, Suffolk. *Left:* flint core with blades replaced. *Right:* blade ready for division into gun flints (after Oakley).

edge. This can be done with a small hammer-stone, but not without danger of both breaking the flake (particularly if it is a slender blade) and battering the fingers. These dangers are avoided by the pressure method in which a flint fabricator is pressed upwards against the underside of the edge to be trimmed or blunted with sufficient strength to detach a little flake; this can be done at great speed so that the whole edge is retouched in a few minutes. The fabricator itself is very little specialized in form; any rough flake with a blunt squarish edge or nose will do; specimens are found in most Upper Palaeolithic sites.

The far more delicate form of pressure flaking first exemplified on Solutrean spear-heads (Fig. 8, J) could not be done with a flint fabricator but required a pointed tool of bone, hard wood, ivory, or a long incisor tooth. This point is placed against the edge to be worked in much the same way as before, but is given a rather sudden push that detaches a very thin, scale-like flake, spreading much farther on to the surface of the tool (Fig. 20).

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Among the American Indians the method is further improved by fastening the point to a wooden haft which is rested against the chest, enabling the tool itself to be controlled with both hands. It is not known whether the Palaeolithic peoples had devised this method.

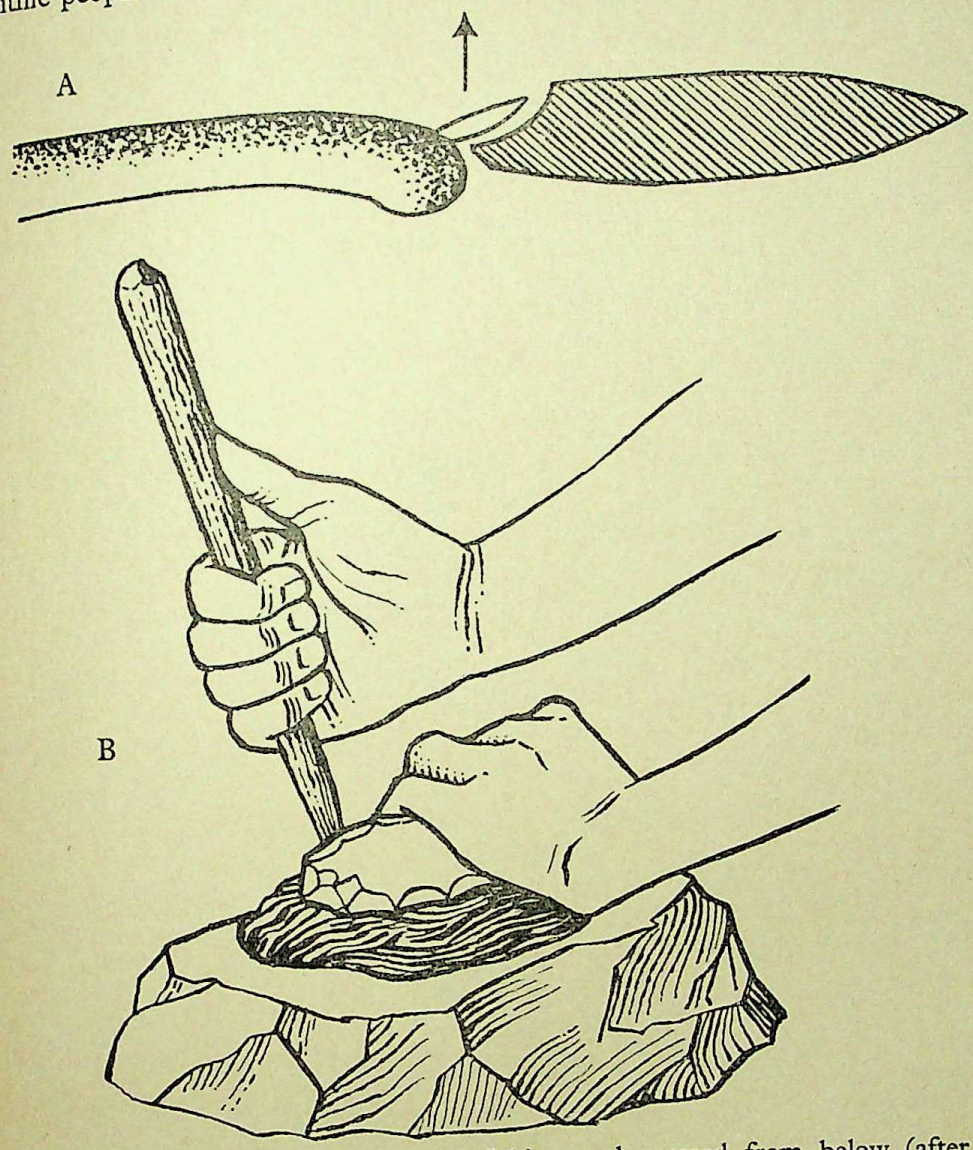


FIG. 20. Pressure flaking. A: the flaking tool pressed from below (after Singer); B: as practised in N.W. Australia (after D. S. Davidson).

Pressure flaking was brought to its highest pitch of perfection in the marvellous knives, sickles and other implements made by the Egyptians. It demands the best materials and can hardly be practised except on flint, obsidian or fine-grained chert.

A very distinct method seems to have been employed for making the

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majority of the gravers or burins that were such a valuable addition to the Upper Palaeolithic kitbag. The essential feature of a graver is that a strip

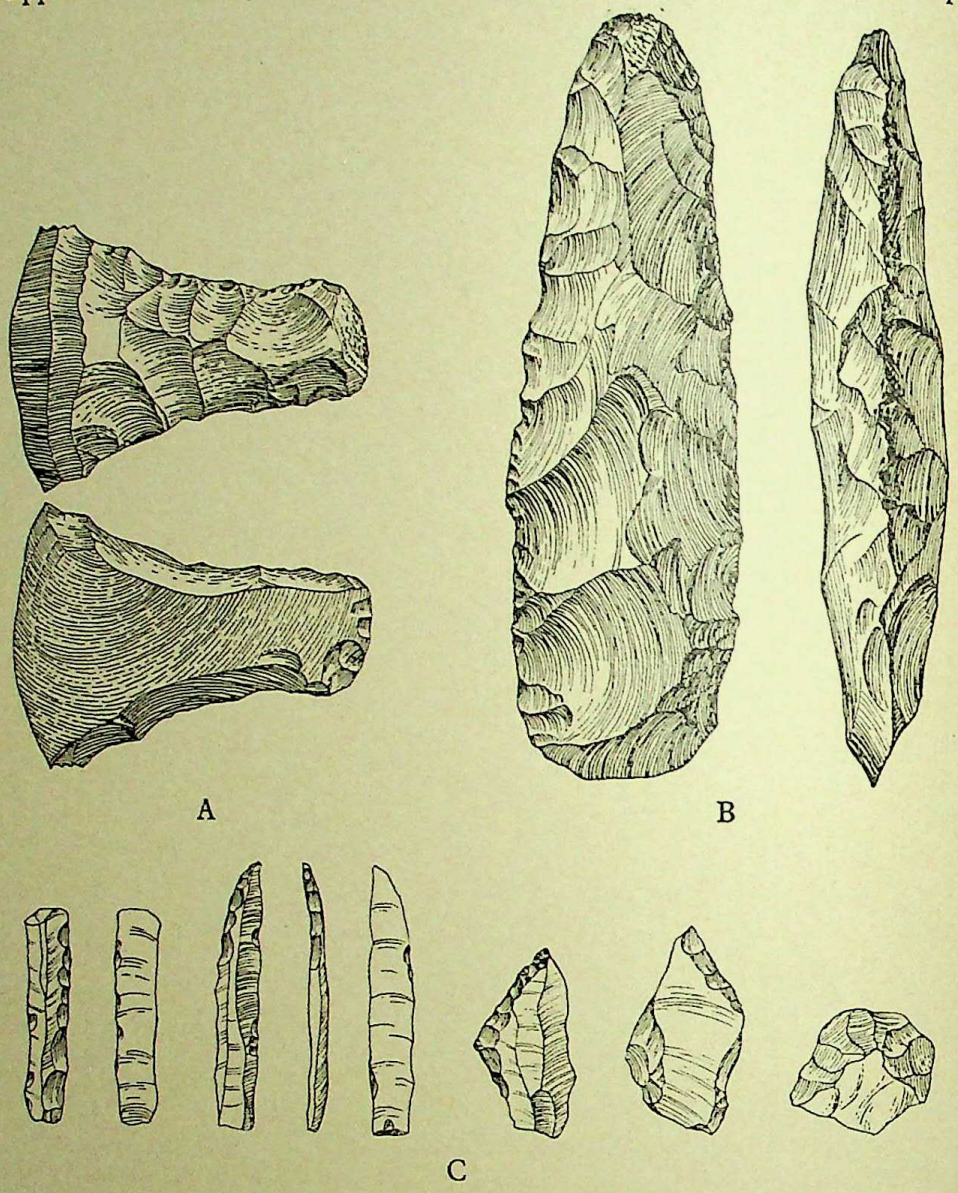


FIG. 21. Mesolithic implements. A: *tranchet* axe; B: adze or core axe from Denmark, scale 1/2 (after Klindt-Jensen); C: microliths from Jalahalli, Mysore, scale 1/1 (after Seshadri).

of flint should have been struck off down the edge of a blade or other flake at right angles to its main surfaces; the narrow facet thus obtained may dissect with the ordinary flat end of the blade with an end blunted by retouching or with another graver facet identical with itself (the *bec de flûte* type). The result is a chisel edge, with a breadth equal to the thickness of

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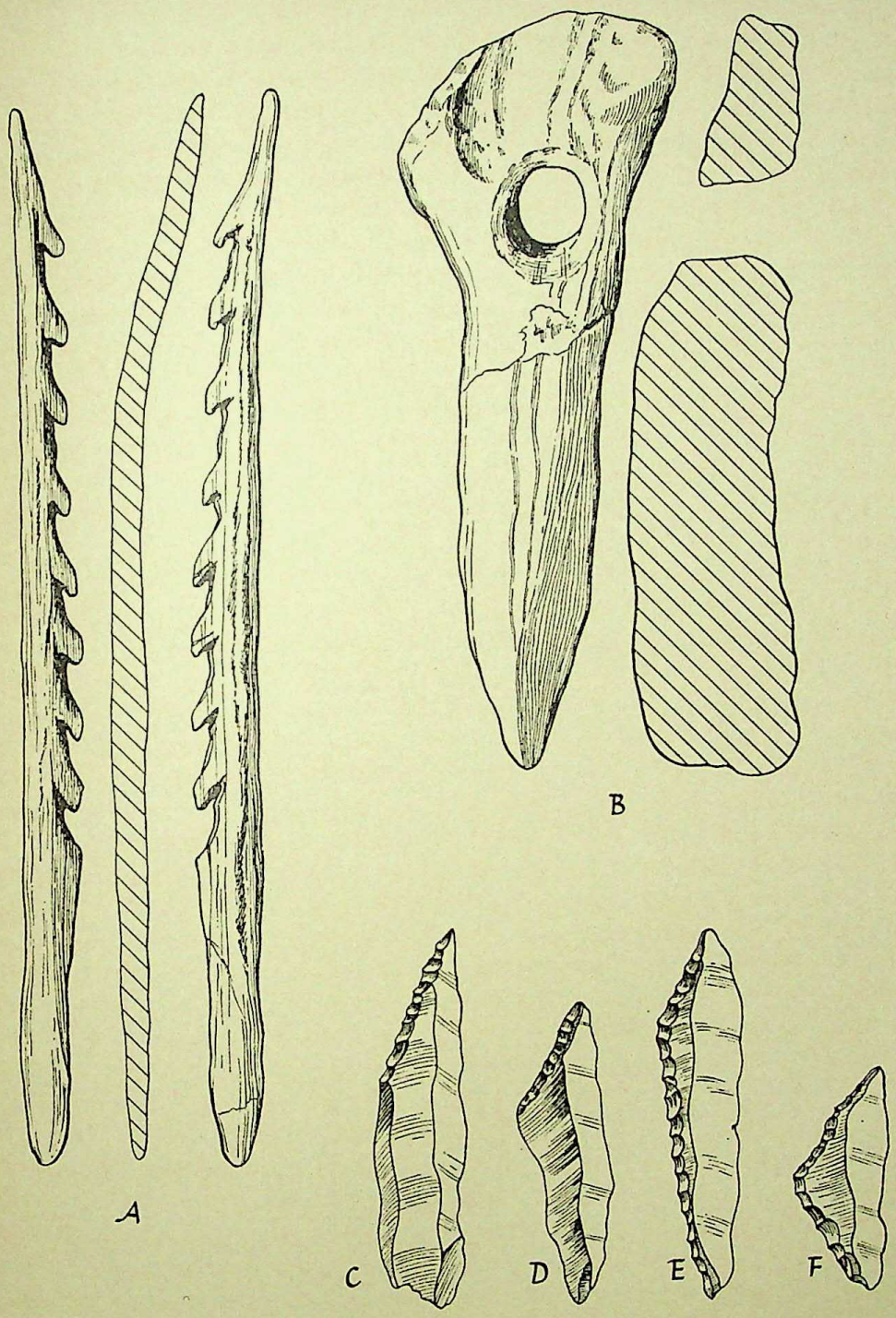


FIG. 22. Mesolithic implements from Star Carr. A: antler point (scale 1/2); B: mattock head, elk antler (scale 3/8); C–F: microliths (scale 1/1) (after J. G. D. Clark).

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the blade; a curved gouge-like variant can be produced by making several graver facets on one side dissect with a single one on the other. There is an enormous variety of both gravers and gouges, but it seems that most were made by the same technique. The end of the blade to be converted into a graver was trimmed into a blunt point and this rested on a fixed anvil-stone. If the blade was held at the right angle, a sharp tap on its side detached the graver strip as the result of indirect impact through the anvil. If the blade was turned round and a tap delivered on the opposite edge a second graver facet could be made to dissect with the first to produce a *bec de flûte*. Experiment has shown that this ingenious use of the ricochet blow is much quicker and more effective than striking directly downwards from the blade end.

In many ways the methods used to make microliths were similar, but one or two developments deserve mention. It appears that for trimming or blunting the backs of these small or even diminutive blades into lunates, triangles and their other forms, a fabricator was devised that would detach a number of the minute retouch flakes simultaneously, so trimming a whole edge in one movement. Again, these same forms came to be made by chipping two notches deep into one side of a little blade (or on opposite sides for a trapeze) and then snapping off the ends beyond the notches between the fingers, and retrimming the resulting breaks. For a very long time the snapped-off ends were known as micro-burins and accepted as tools instead of the waste products that they really are.[9]

The north European Mesolithic peoples devised a new trick of flaking to give a sharp yet strong edge to their wood-cutting axes and adzes. These *tranchet* edges were formed by the intersection of two large flake scars, the flakes having been detached by blows struck crosswise at right angles to the main axis of the tool. Another very significant innovation among these peoples was to peck axes, mace-heads and picks from hard rocks, sharpening the edges by grinding, and making a hafting hole by boring from both sides. These tools, made in small numbers by the Maglemosians and Ertebølle people, clearly look forward to Neolithic techniques (Figs 21 and 22).

## WORKING IN BONE, ANTLER AND IVORY

It is a little surprising that these materials do not seem to have been used for tool-making before Upper Palaeolithic times, but presumably they were found too intractable until man was ready to go forward to specialized tools, among them the graver. Like stone, bone was utilized before it was manufactured. The Peking men and after them the Neanderthalers used solid pieces as chopping-blocks, and broken long bones for sleeking skins and other odd jobs; we have already seen how long bones may also sometimes have been used for flaking hand-axes.

When bone-working began at the hands of Upper Palaeolithic man, it was at first mainly by rubbing it down on sandstone or some other rough surface.

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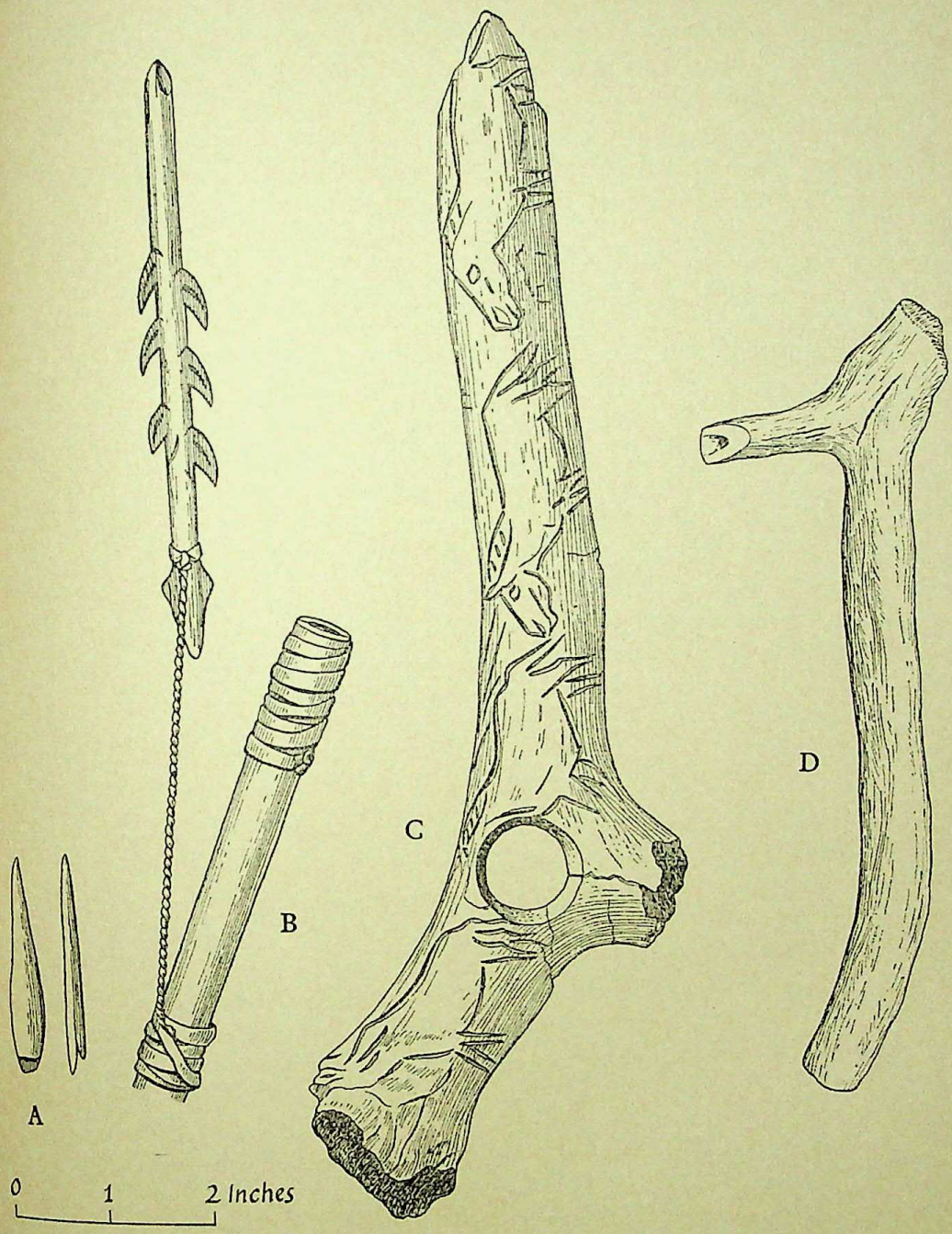


FIG. 23. A: Aurignacian split-base bone point; B: Magdalenian harpoon; C: Magdalenian *bâton de commandement* (after Oakley); D: Lyngby antler axe. Scale 1/2 (after Singer).

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In this way awls, lance-heads and other points could be made—a form of tool still often found in use in quite recent times. This method was also used for the so-called Lyngby axe, the first effective tree-felling implement in the north. But soon the use of gravers made skilled cutting and carving feasible; it is nowhere better shown than in the exquisite barbed harpoon-heads and ornamented spear-throwers of the Magdalenians. Boring of holes, presumably with flint awls or drills, was soon mastered, as is shown in *bâtons de commandement*, perforated harpoon-heads, and, at its most precise, in the Magdalenian needles. At first this drilling must have been done by hand, but by Mesolithic times at latest we can be reasonably sure that the bow-drill had been invented.

The hollow centre of bones must always be an obstacle to the manufacture of large accurately shaped tools; among the later Upper Palaeolithic and Mesolithic peoples an ingenious way of obtaining strips of solid bone and antler was much in use. A graver was used to cut parallel furrows at the required distance apart, and when they had gone deep enough a blow at the top would detach the strip between them. This method was used for harpoon and leister heads, and probably also to obtain narrow spalls to be rubbed down into needles.

The working of bone, antler and ivory both for implements and works of art was brought to greater perfection by the Magdalenians than by any other primitive people. Their skill and artistry have been approached only by the Eskimo.

## WORKING IN WOOD

There is no reason to doubt that wood was utilized and worked as early as stone, but it seldom survives to remind us of the fact. The oldest known wooden artifact in the world is the pointed end of a yew-wood spear found with Clactonian tools in the water-logged Elephant Bed at Clacton-on-Sea in England. The end had been sharpened with flint flakes. Second to it comes a complete spear, also of yew-wood, found inside the skeleton of an elephant at Lehringen in Germany. This weapon, evidently most effectively used, had been made by Levalloisians, and they hardened the point by fire. The hollow scrapers, or spoke-shaves, that occur in one form or another throughout most of Palaeolithic times, were almost certainly used for shaping wood, and, to judge from Australian analogies, so too were other forms of scraper that have sometimes been too readily assumed to have been exclusively used for preparing skins.

We do not know when stone tools first began to be supplied with wooden hafts, though it was probably not before the time of the Middle Palaeolithic cultures. Such usage, however, became very common among the Upper Palaeolithic and Mesolithic peoples who must have mounted tanged dart-heads, spear-heads, drills and other tools in wood, as well as the great range of microliths that were set in wood to make barbs, points and continuous

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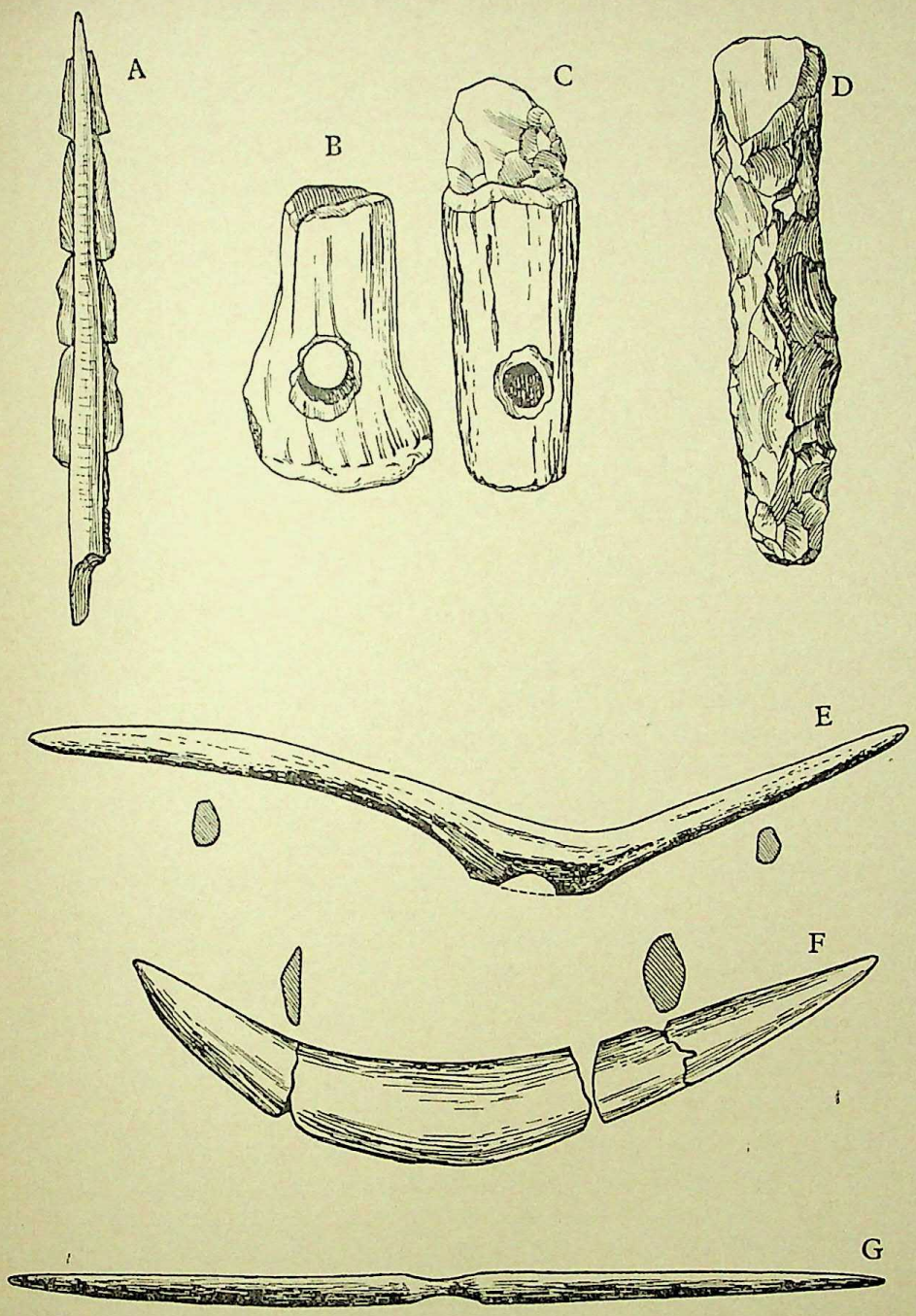


FIG. 24. Mesolithic implements from north-west Europe. A: bone arrow-point with flints, Skane, Sweden; B and C: Maglemosian perforated antler sleeves; D: a 'Thames pick', Farnham, Surrey (all scale 1/3). E and F: wooden throwing-sticks, Jutland (scale 1/4). G: bow stave, Holmegaard, Denmark (length 145 cms.) (after Singer).



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cutting-edges (Fig. 24). Bone harpoon-heads and leister prongs were also attached to wooden shafts. With the invention of the bow and arrow (p. 87) stone-tipped and all-wooden arrows must have been added to the repertory. Large bows, evidently of wood, are shown in eastern Spanish cave paintings of late Palaeolithic and Mesolithic Age. The Maglemosian bows preserved in a peat bog at Holmegaard in Denmark were well designed and skilfully executed; cut from a single piece of elm, the longest was about 145 centimetres. The arrow-shafts associated with them had grooved ends, presumably to take flint heads.

In Europe, whence so large a proportion of the evidence must still be derived, true carpentry blossomed with the spread of forest in the Mesolithic Age. The northern peoples felled trees on a considerable scale, used their axes and adzes to hollow dug-out canoes (with the help of fire), carved canoe paddles and boomerang-like throwing-sticks—in addition to the bows, arrows and many other shafts and hafts already mentioned.

## TRAPS AND NETS

From the beginning of his history man was able to kill animals swifter and stronger than himself. The cunning that made this possible revealed itself most clearly in the setting of traps. As we have seen the use of implements can begin quite empirically by the snatching up of handy sticks and stones, but to make and set a trap demands a very considerable degree of imaginative foresight. It is impossible to know when it began. No doubt driving herds over cliffs or into pits, morasses and other natural danger-spots must have preceded deliberate constructions. The branch-covered pit with a stake at the bottom may early have been devised for killing elephants and other heavy animals. Modern Congo pygmies to this day dig holes in which they conceal themselves below piles of dung (to disguise their scent) and leap up to disembowel a passing elephant.

The first possible evidence for the construction of traps is that of the Magdalenian paintings in the Font-de-Gaume cave in the Dordogne. Certain sketchy drawings once known as 'tectiforms' have been interpreted as fall-traps, mainly because in one of them a mammoth appears to be floundering. But as the Palaeolithic artists often made quite haphazard superpositions, this interpretation is by no means certain, and it remains equally probable that the tectiforms represent summer huts. The most ancient traps to have survived are fish-traps dating from Atlantic times in Denmark—probably the handiwork of the Ertebølle people. These are of a type still in use in Europe today, making one of the most interesting known examples of the persistence of a simple but efficient invention. They are known also from tomb-paintings of the Egyptian Old Kingdom. The type is a basketry cone or tube, closed at the bottom and with internal funnels, one always just inside the mouth, to prevent the fish from escaping. It is, in fact, the principle

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of the lobster-pot. One of the two Danish examples had evidently been quite four metres in length and just under a metre in diameter; it was made of peeled wands held together with transverse plaits of split twigs. The second was made of birch twigs plaited with pine slivers. Traps of this kind would have to be set in narrow channels, either natural or artificially contrived.

Since its invention, the most effective way of catching fish has been by netting. Before the net could be thought of, the twisting of fibre into cord had to be invented. It seems not impossible that this important step may have been taken by Upper Palaeolithic hunters; the woman honey-gatherer (p. 141) appears to be using a rope ladder, but even if this picture dates from Palaeolithic and not Mesolithic times, such a rope could have been made of thongs. The earliest cord to have been discovered is in fact in two fish-nets dating from the Mesolithic Age. The more complete, from near Viborg in Finland, dates either from Ancylus or Littorina times; the second, from north-east Estonia, certainly belongs to the Ancylus-Littorina transition of about eight thousand years ago. They are likely to have been made by late Kunda people. Both are of the seine type—a long strip of net to be held vertically in the water by means of floats and weights, and generally used to catch surface-swimming shoals. The Finnish find had seventeen oblong pine-bark floats perforated at one end and a number of large pebble weights with traces of fibre, doubtless used to fasten them to the net, still adhering. The tiny fragments of net preserved where they lay against the floats were made of a double-threaded cord of lime bast or nettle-fibre; the reticulation had been secured by knotting, but unfortunately the character of the knot was not detected. The Estonian specimen seems to have been of exactly the same type although nothing but floats and weights survived; the weights were of a more ovoid shape than the Finnish ones. It seems very likely that long narrow nets of this kind may also have been used for catching small animals by drives in undergrowth, a method still in use—for example among the Congo pygmies.

## BOATS AND OTHER TRANSPORT

No actual remains or pictures of Palaeolithic boats have been found, nor is there any evidence implying sea passages by Palaeolithic peoples. Nevertheless, it seems almost certain that they must have used logs or rough rafts on lakes and rivers from time to time, particularly after they became interested in fishing.

The use of the seine fishing-net implies the use of a boat, even if one end is attached to bank or shore, and it so happens that the oldest known boats also date from Mesolithic times in northern Europe. One, from Drenthe in the Netherlands, has been dated by Carbon-14 to about 6300 BC. It is a dug-out canoe made from a pine trunk with solid, roughly-squared bow and stern. Fire had been used in the hollowing process. The second, also a

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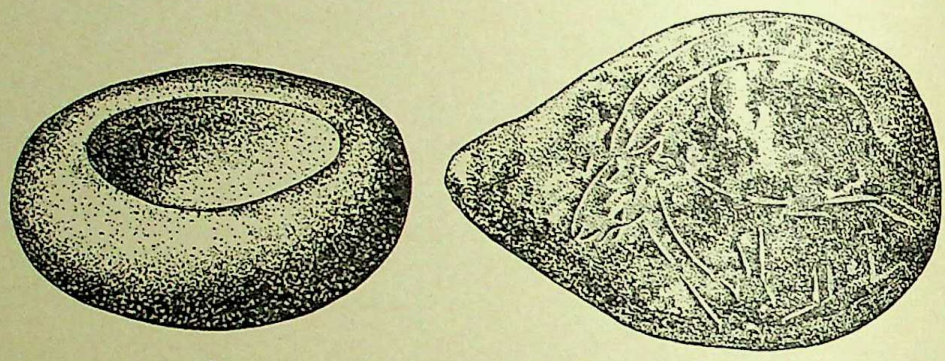
dug-out canoe, comes from the silt of the River Tay in Perth, Scotland. It had been shaped, also with the help of fire, from the trunk of a Scots fir, and measured rather under a metre across the gunwales; neither bow nor stern was well enough preserved for its form to be distinguishable. This canoe had been made in the second half of the Ancylus Lake period, and can probably be credited to the Maglemosians. Maglemosian steering paddles with oblong or roughly rectangular blades have been found in both Denmark and England.

## LAMPS

For the greater part of his history, man is unlikely to have had any artificial light beyond the fugitive flicker of fires and torches. In some regions where suitable wood was available he may have collected resin and used lumps of it for torches. The oldest known lamps were used by the Upper Palaeolithic



A B

FIG. 25. Upper Palaeolithic stone lamps. A: La Madeleine (scale 1/2; after Peyrony); B: La Mouthe, length *c.* 12·8 cm. (under-surface).

hunters of western Europe, probably mainly for lighting the artists when they were at work in the depths of the caves. They were shallow saucers, sometimes with a broad tongue projecting from the rim to form a handle (Fig. 25). The finest known example of this kind of lamp comes from the cave of La Mouthe in the Dordogne; it is very carefully finished, of good proportions and with a pleasing engraving of an ibex on the base. Eskimo who have comparable, though larger, lamps use blubber from seal or walrus for fuel and a wick of moss. Possibly the Stone Age Europeans may have done the same, for seal remains, though uncommon, have been found in their cave litter at most periods, while live seals are several times represented in their art. Usually, however, they must have made do with ordinary fats.

Curiously formed oval containers with rounded bases are one of the two pottery forms commonly found in the middens of the Ertebølle people, and it is thought they were used as blubber lamps. Seal bones, though not abundant, occur at very many Ertebølle sites.

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It is quite probable that, like the Eskimo, the Palaeolithic and Mesolithic hunters occasionally used these lamps as a source of heat and for small jobs of cooking.

## POTTERY AND OTHER CONTAINERS

Pottery was almost certainly an invention of the Neolithic Age that went with the more settled life of husbandry. Its occurrence at Mesolithic sites in northern Europe and east Africa is therefore thought to be merely a product of the overlap of periods and the borrowing of a useful invention from a higher culture by a lower one. Nevertheless, the ability of the Moravian mammoth-hunters of the late Palaeolithic to harden figurines in clay ovens must be recalled, and the evidence cautiously judged.

In the Ertebølle kitchen middens, besides the oval containers already described as possible blubber lamps, remains of large jars with pointed bases are the standard form. They have all been made by the coil technique (p. 303), often burnished with a pebble, and fired at no very high temperature; the paste is coarse, mixed with large grit. Pottery of this kind is found throughout the shell-mound middens from top to bottom and must therefore date back at least to between 4000 and 5000 BC.

It may be guessed that the hunting peoples of the Palaeolithic Age used leather vessels and sewn-up skins for containing liquids, but we have no proof of it. The Spanish honey-gatherer must be mentioned again, for she appears to be carrying a handled leather bag to receive the comb. The attractive art of working the silvery-white bark of the birch was probably widespread among the northern peoples during the Mesolithic period when this tree was abundant. Rolls of birch bark up to thirty inches long were found at the lake-side encampment of Maglemosians at Star Carr in Yorkshire, and pieces have also been found at a Maglemose site in Denmark. No vessels have as yet been discovered, but even if the bark was most commonly used for boxes, quivers and the like, containers made of it could presumably have been caulked to make them watertight.

## CLOTHES AND ORNAMENTS

Clothing is both practical and anti-practical, a means of keeping alive and an acutely uncomfortable, painful or even dangerous means of displaying wealth or spiritual and social status. It is possible to argue that when our ancestors first took to dressing themselves it was for the unpractical reasons. Supporters of this point of view quote the Fuegans who seem cheerfully to survive in a cruelly cold climate with no more than a skin slung over the shoulder; the need of clothes to keep warm, they say, is due entirely to habit, and man first covered his body from a desire for display. It would be wrong to scorn this point of view, for we are far too inclined to expect primitive man to be like ourselves in always putting what we regard as

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practical needs before more imaginative or purely psychological ones. Nevertheless, it does appear certain that clothing served an essential physical need in the Stone Age, and must rank after tool-making and the control of fire as one of the products of human ingenuity enabling our kind to adapt to a world-wide range of environments.

As the earlier hand-axe users seem generally to have avoided very cold climates by migration (p. 64), they may not have had much need for protection; the conditions offered by the second and third interglacials were probably relatively easy everywhere. The early flake tools look as though the preparation of skins was among their uses, and by the time we come to the Neanderthalers it is usually assumed by higher authorities than the popular illustrators that they wore pelts further to protect them from the glacial cold that unquestionably drove them to cave-dwelling.

FIG. 26. Upper Palaeolithic fur clothing. Figurine in ivory, Mal'ta, Siberia—slightly enlarged (after Singer).

With the Upper Palaeolithic Age both art and the remains of material culture lift us on to certain ground. Some of the fine awls and points that were made throughout the period seem best suited for piercing leather in order to stitch it, while the fine bone needles of the Magdalenians could have been used for sewing as perfectly neat as that practised by the Eskimo and some North American Indians on their well-tailored and beautiful leather clothes. A Gravettian statuette from Mal'ta, Siberia, shows a man wearing a hood and closely fitting body garment and trousers of skins with the fur outside (Fig. 26); these seem to have been made all in one piece like the 'siren suit' of the English in the Second World War. Most of the female statuettes of the period, being cult objects, are naked, but one seems to depict a small apron worn at the back between the buttocks. One of the very few naturalistic portraits of human beings, the carved, engraved and painted head and shoulders of a bearded Magdalenian hunter from Angles-sur-l'Anglin in the Vienne department of France, shows him wearing a fur robe, well up at the back of his neck and open at the front to show a high-necked garment worn underneath. Crossing the Pyrenees to the Late Palaeolithic and Mesolithic paintings of eastern Spain, we find the men nearly always portrayed naked, whether they are hunting or fighting—a fact suggesting that men normally only clothed themselves when the climate was cold. Some of the women in these paintings, on the other hand, are wearing long skirts, apparently with peaks at the front and back, although their upper parts seem to be naked except for broad armlets.

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To judge from the imprints of broad-toed naked feet found in some of the French caves, foot-coverings were not usually worn. It seems unlikely, however, that these hunters did not tie leather or pelts on to their feet when they had to go on to ice or snow.

It remains to consider the special costumes donned as disguises or ceremonial attire. A number of paintings and engravings in the French caves show men wearing animal masks and pelts, and the only difficulty is to distinguish between those which certainly represent men taking part in the animal-evoking masked dances and other rites so nearly universal among modern primitives, and the few that may perhaps portray hunters dressed up in the skins of the animals they are stalking—a practice commonly found among the Bushmen of South Africa and shown in their art. It seems just possible that the bison-headed man at the famous cave of Les Trois Frères, Ariège, is such a disguised hunter, but on the whole he seems more likely to be taking part in a ritual, and this must be the explanation of most of these pictures. There are little jumping chamois-horned figures from Teyjat, a seeming mammoth-dancer and other masked forms from Combarelles, and a naked man and woman with animal masks engraved on a piece of bone at the cave of La Madeleine, as well as others less easy to identify. As for the famous painting known as the 'Sorcerer' from the same cave of Les Trois Frères, it may represent a shaman or medicine man, but there is something about this most strange antlered figure that suggests rather that an animal deity or ancestral spirit is being portrayed.

The Stone Age hunters must also sometimes have decked themselves on other occasions than religious ones—and particularly for battle. The line of five warriors from the Gasulla Gorge in eastern Spain are wearing head-dresses, some of them apparently feathered.

Among the most interesting discoveries at the Maglemosian lake-site of Star Carr, Yorkshire, were several frontal bones of deer which had evidently been used for head-dresses. The antlers had been cut off, the bone itself shaped into a rough frontlet and perforated, evidently for the reception of feathers or some other embellishment.

These frontlets are the only known surviving relics of the masks, head-dresses and other gear so vividly recalled for us by Stone Age art. With personal ornaments, often made of durable materials, much more has been preserved. Decorating the face and body, changing its colour, perforating the flesh for the reception of ornaments, reshaping the skull, to do these things was one of the earliest desires of man, and one that has only grown more subtle with civilization. The motives seem to be strangely mixed. Ornaments can come to be the mark of an age group, a clan, a tribe or of leadership within the tribe, and so satisfy the wish for some mark of exclusiveness and at the same time of membership always so strongly developed in children. They may also satisfy the craving for the rare and precious possession. Again, there seems to be deeply rooted in human psychology a notion

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*qu'il faut souffrir pour être beau*—or *belle*. Finally, perhaps there is something rather better than all these urges, a certain divine discontent that has made man dissatisfied not only with his surroundings but with his own person. He has wished to change and beautify his face and body; sometimes it may be in a kind of poetic emulation of the birds and flowers that he so often plunders for the purpose.

If, as it appears, the *Pithecanthropi* brought back bright quartz crystals to their caves at Choukoutien because they were pleasing to the eye, it seems

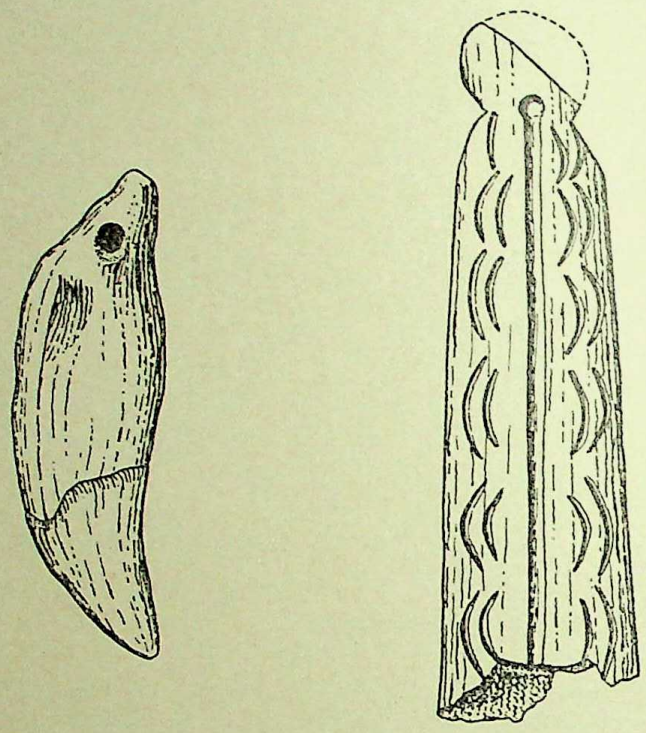

FIG. 27. Upper Palaeolithic pendants from La Madeleine. *Left:* canine tooth. *Right:* engraved bone (after Capitan and Peyrony).

likely that they may already have been inclined to deck themselves with feathers, or anything of striking colour or form. But with ornaments as with so many other creations of culture, it is not until the Upper Palaeolithic Age that we begin to find tangible evidence of their existence. In Europe skeletons have often been found with ivory and bone pendants (Fig. 27), and with necklaces, bracelets, legbands and headgear made of shells and bone beads. Beads have usually been made from dentalium, spondylus, cyclonassa, cowrie and other shells, from small vertebrae and occasionally from fossils, all carefully drilled for threading. Shells have often been carried hundreds of miles from their home seas. Particularly fine necklaces and shell head-dresses decked some of the Grimaldi skeletons. In the triple burial in the Barma Grande cave, for example, the skeleton of a man still displayed a necklace in which

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teeth made spacers dividing regular rows of beads of nassa shells and fish vertebrae. This necklace, by chance held intact by a clay deposit, suggests that scattered beads in other burials may once have been threaded with equal excellence of design. Teeth with an hour-glass perforation through the root were popular, particularly the curiously lobed canine teeth of stags. Among forty canines of bear and lion apparently worn as a necklace and belt by a Magdalenian buried at the Abri Duruthy at Sordes, nearly half were finely engraved, with seal and fish among the animals portrayed.

The same love of personal finery spread with Upper Palaeolithic traits to eastern Asia. At Mal'ta and other Siberian sites there were well-made beads and pendants of ivory and bone; in the Late Upper Palaeolithic or Early Mesolithic occupation of the Upper Cave at Choukoutien bodies have been buried wearing cylindrically shaped bone pendants, beads of perforated fish vertebrae and sea-shells, and with pieces of mother-of-pearl. The shells and mother-of-pearl had been brought from the coast one hundred and twenty miles away. Pieces of red haematite found in these Chinese graves make another link with the west, for ochre and other red oxides often occur in Upper Palaeolithic burials in Europe, and although it is believed that the dead were laid with it for magical reasons (p. 208), there seems good reason to suppose it was also used as a body paint by the living. An instance of a pendant which was certainly worn as an amulet comes from Petersfels; the form, though highly schematized, is derived from the female statuettes, and was presumably a fertility charm. Probably the perforated cut-out animal heads, usually of horses, that form an attractive element of Magdalenian home art were also worn as amulets.

The traditional ornaments of the Upper Palaeolithic remained popular among the Mesolithic peoples. The Maglemosians wore amber beads and pendants, sometimes enriched with geometrical patterns, as well as a great range of perforated teeth—those of bear, aurochs, wild cat, otter, wild boar and deer have been recorded. In the microlithic culture represented at Langhnaj, Bombay State, dentalium shells accompanied burials. By far the finest Mesolithic ornaments, however, come from the Natufian cemetery at the Wadi el Mughara in Palestine. Several of the skeletons there had coronets and caps of dentalium shells, and one necklace in which these shells seem to have been used as spacers between bone beads carefully cut and polished into twin lobes, probably phallic in intention.



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## APPENDIX TO CHAPTER VI

# LEADING TYPES OF TOOLS AND WEAPONS CHARACTERISTIC OF THE PALAEOLITHIC AND MESOLITHIC CULTURES OF THE WORLD

### I. LOWER AND MIDDLE PALAEOLITHIC CULTURES

*The Kafuan and Oldowan Cultures*

The implements of these African cultures, the oldest known in the world, are made entirely on water-worn pebbles of lava, quartz and quartzite. The Kafuan, if indeed it is a true culture, is represented mainly by flattish oval pebbles with two or three flakes removed to make crude chopping, cutting and scraping tools. Sometimes the rough primary breaks show further flaking, always on one side of the pebble; in the latest form of the culture hollow scrapers and wedge-shaped points can be distinguished. In the Oldowan culture the pebbles were usually more fully rounded. The same chopping, cutting and scraping tools are at first characteristic, but in the latest form they were chipped much more extensively and on both sides to produce roughly oval bifacial tools, the bases still consisting of the unworked surface of pebble. These bifacial pebble tools are clearly ancestral to the true Abbevillian hand-axe.

*The Abbevillian-Acheulian Cultures*

These core-tool cultures (which include the Stellenbosch of South Africa) are typified by the hand-axe, although flakes were sometimes utilized and occasionally shaped into rough side-scrapers. The commonest type of hand-axe is a tongue-shaped implement with one end quite narrowly pointed. (They are often described as pear-shaped, but the pear in question would be a flattened one.) In the earlier Abbevillian specimens the broad end is often unworked, consisting simply of the natural surface of pebble or flint nodule. In all Abbevillian hand-axes the edges tend to be zigzag as a result of the deep flake scars left by the hammer-stone blows; with the Acheulian the cylinder-bar technique gave straight edges, often with one side sharper than the other. The advanced Acheulian repertory includes more rounded, ovate forms. In South Africa where suitable small nodules were not readily available, hand-axes were often made on thick flakes worked on both sides; as thinner, more elegant forms developed with the Acheulian culture, flakes were often used also in Europe. Many of the hand-axes associated with Swanscombe man were shaped from such stout flakes. Although the hand-axe in all its phases shows astonishing uniformity throughout its range in Africa, Europe and Asia, certain local variants can be distinguished. In Africa and India a variety known as the cleaver has a large flake surface at one end producing a flat, axe-like edge. In western European ovate hand-axes the sides often show a sinuous line like a very open S which appears to have been intentional. No variety of hand-axe, so far as is known, was ever hafted.[10] The latest phase of the Acheulian is distinguished

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as the Micoquian, the typical form of tool being a small and very pointed hand-axe usually made from a flake.

*The Clactonian and Tayacian Cultures*

The Clactonian was predominantly a simple flake culture in which the flakes were struck off, probably on a fixed anvil-stone, in such a way as to make a very prominent bulb of percussion. The base of the flake (striking platform) was plain, without the flake scars left in preparing the platform for the Levallois flake, and at a characteristically open angle (about 120 degrees) to the main flake surface. The edges of these coarse, irregular flakes were often retouched all round the edges to make scrapers and knives. Hollow scrapers or spoke-shaves were an established form, and must sometimes have been used to trim the shafts of pointed wooden spears. Cores, often with the crust of the nodule left on one side, were further trimmed to make a kind of heavy chopper. The Tayacian, another flake culture, is related to the Clactonian and somewhat later. Newly recognized, its tool types are at present ill-defined; the flakes are usually smaller than the Clactonian but equally rough.

*The Punjab Flake Culture*

This simple flake culture is the oldest known from the Indian sub-continent. It consists entirely of large flakes with plain striking platform at a high angle to the flake surface, thus generally recalling the Clactonian technique. A steep, narrow retouch seems sometimes to have been applied to the edges, but usually there was no secondary working.

*The Soan, Anyathian, Tampanian, Patjitanian, Choukoutienian and related Cultures*

All these cultures belong to the chopper and chopping-tool group of south and east Asia. Of the three most characteristic implements: (*a*) the chopper is like a large coarse scraper, but more commonly made on a core instead of a flake; it is flaked only along one side of the upper surface to produce a rounded or straight cutting-edge; (*b*) the chopping-tool is made on a core or tabular chunk of stone and has a single cutting-edge made by flaking from both surfaces; the intersecting scars of coarse flakes produce a sinuous or zigzag edge; (*c*) the hand-adze is a core tool usually of tabular form with the cutting-edge at one end and in the opposite plane from the long axis in the characteristic adze fashion; this edge is trimmed on the upper surface only.

The Early Soan culture of Pakistan and East Punjab is the most westerly of the Asiatic chopper-chopping-tool cultures, following the Punjab Flake Industry. It includes both flake and pebble tools, the flakes generally with plain striking platform at a high angle to a flake surface with a large bulb of percussion in the Clactonian manner. The choppers are made on pebbles flaked over the upper surface and along one side; the chopping-tools, also on pebbles, may show the characteristic zigzag edge. The Soan at this early stage belonged entirely to the Asiatic tradition. The Late Soan which dates from the third glaciation, probably extending into the following interglacial, in its first phase is a refinement of the early culture with the choppers and scraping implements smaller and more neatly made. Already there is some progress towards the prepared striking platform, tortoise-core technique. A few parallel-sided flakes, or flake-blades, are also

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included. In the second phase Late Soan B, the tortoise-core method has become characteristic and the culture is in many ways close to the Late Levalloisian of western Europe, although choppers made on pebbles still persist.

The Burmese Anyathian culture tends to divide into two according to whether tools have been made on silicified tuff or the intractable fossil wood. Where tuff has been available, choppers predominate, followed by chopping-tools and then adzes. Flakes also are present, usually irregular and with plain, high-angled striking platforms comparable to the Clactonian; rarely these flakes have been retouched to make scrapers. In the fossil wood implements the difficulty of flaking except across the grain has produced a very high proportion of tabular tools worked at the narrow end; nearly 80 per cent of tools are adzes, most of them with a single cutting-edge, a few double-ended and in both forms with a retouch that gives the edge a slightly scalloped outline. The repertory is completed by choppers and chopping-tools in much smaller numbers.

The little-known Tampanian culture of Malaya has the usual assemblage of flakes, chopping-tools and choppers, the latter characteristically with rounded or oval cutting-edge, including some that are very steep-ended. As in the Patjitanian, a crude hand-axe-like tool occurs.

In the Patjitanian culture of Java large, coarse flakes often with the outer crust remaining on the butt are common, usually without secondary working; such core tools as exist are usually made on pebbles or small boulders. The chopper is the predominant form, but chopping-tools also occur and adzes made on very massive flakes. Implements that have been described as proto-hand-axes are an unusual feature of this culture, but as these oval and sometimes pointed forms are flaked on one surface only and merge imperceptibly into ordinary chopping-tools, they are likely to be a local derivation with no influence from the Abbevillian-Acheulian tradition.

At Choukoutien itself the great majority of the broken pieces of quartz, sandstone, chert and other stone artificially broken were not recognizable as implements; flakes seem more commonly to have been utilized than cores, and a few were retouched to make crude points and scrapers. Pebbles and oval boulders had been made into both choppers and chopping-tools, but these were infrequent. In the upper levels a more careful selection of material had been made, and the resulting greater use of chert led to somewhat better-looking tools, but with no real advance in design.

*The Levalloisian Culture*

It is impossible altogether to isolate a Levalloisian culture, so closely does it appear to be related to the Acheulian tradition and so often is it found mingled with other cultures, particularly the Micoquian and Mousterian. The Levallois technique has already been described, and some description given of the resulting tortoise-core and Levallois flake. The typical cutting-tool or side-scraper made by this method is oval or sub-rectangular and often a considerable size; sometimes, however, triangular flakes were struck, ranging from a broader to a very narrow pointed form. As has been said, secondary retouching was usually unnecessary on these carefully prepared flakes, but some points seem to have been further thinned at the base as though for hafting. In the later Levalloisian of the last interglacial period, a small, bifacial, heart-shaped hand-axe was often included in the repertory.

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*The Mousterian Culture*

In so far as the term Middle Palaeolithic has validity it can be applied to this culture, together with the versions of it showing Late Acheulian and Levalloisian influence. The pure Mousterian flake culture shows its Clactonian ancestry in the use of rather thick flakes with plain striking platforms; an assembly of tools usually shows a somewhat monotonous repetition of two standard types, a D-shaped side-scraper and a triangular point or knife—in both the retouching is careful and usually in the stepped flaking technique. A third implement typical of this culture is the small discoidal core, presumably used as a rough scraper or chopper. In the latest phase there is a tendency for the points and side-scrapers to be smaller.

*The Sangoan Culture*

This culture developed from the Acheulian tradition as a special adaptation to wet tropical forest conditions of central Africa. It is typified by four types of implement: a gouge or chisel worked on both faces, an elongated pick or adze, an axe with a *tranchet* edge and a long lance-head.

*The Fauresmith Culture*

This culture developed the old Stellenbosch (Acheulian) tradition into small slender hand-axes and cleavers, but a very high proportion of all tools was now made on flakes and may have been intended for hafting. In some regions carefully shaped round stone balls probably were used for bolas.

## 2. THE UPPER PALAEOLITHIC BLADE CULTURES

*The Châtelperronian Culture*

The earliest of the known blade cultures included among its tools the simple end-scrapers, spoke-shaves, and several forms of graver that occur throughout all these Upper Palaeolithic cultures, but is distinguished by a particular form of knife blade. The Châtelperronian knife is made from a blade with one edge straight and razor-like, the other gently curved over towards the point and blunted by steep retouching. The most primitive version of it (sometimes particularized as the *Audi* point) is broader and made from an ordinary longish flake rather than a true blade.

*The Aurignacian Culture*

This culture (formerly known as the Middle Aurignacian, when the Châtelperronian was Lower, and the Gravettian Upper, Aurignacian) includes some of the most skilful and distinctive flint-work of Upper Palaeolithic times; it is also marked by the first introduction of true bone-working. The flint-working is particularly marked by steep trimming with narrow, parallel-sided flake scars that gives a finely fluted effect. This is found on end-scrapers, small roundish scrapers looking like little cores, on keeled scrapers and a complicated form of beaked graver or gouge (*burin busqué*). The bone implements included little pins or awls and, most characteristically, the split-based bone point, evidently a light spear-head, that had the one end ground and polished to a point, the other split (but not *cut*) to receive a wedge-ended shaft. They also include *bâtons de commandement*, or portions

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of antler with one or more holes driven through them. The name signifies a belief that they were used as ceremonial sceptres, but although this may conceivably have been true of some of the richly carved examples later made by the Magdalenians, there is no need to doubt that the Aurignacian specimens were wholly functional, probably used either for straightening shafts, or softening leather thongs.[11]

*The Gravettian Culture*

This culture shows its derivation from the Châtelperronian in the knife blade that is its most distinctive tool. The Gravettian form is inclined to be rather smaller, and the blunted back is straight, parallel with the cutting-edge, instead of curving forward to the point. Probably two or more of these blades were set in a grooved wooden handle to produce a continuous blade—thus presaging the multiple settings so characteristic of the Mesolithic Age. Points, probably dart-heads, with a kind of tang and a shoulder on one or both sides, make another new type appearing at the end of Gravettian times. Bone was less skilfully used than in the Aurignacian culture. Among the eastern Gravettian mammoth-hunters, however, ivory was made into wedges for splitting wood and bone.

*The Solutrean Culture*

The Solutrean culture of southern France and northern and eastern Spain is sharply distinguished by an extraordinary mastery of pressure flaking, displayed at its most exquisite in the willow-leaf and laurel-leaf lance points. These weapons range in length from about two inches to as much as a foot in exceptional specimens. Often they are pressure flaked all over both surfaces. The later Solutrean is characterized by the addition of a tanged point with a shoulder or low barb on one side only; unlike the Late Gravettian shouldered points these are pressure flaked and very exactly shaped. In this last phase of the south-west European Solutrean some local specializations developed. A large concave-based point is typical of the north-west Spanish coast (where the single-shouldered type is unknown), while in south-east Spain a true winged and barbed point occurs which is in every way comparable to true arrow-heads of later times.

*The Hamburg Culture*

This northern counterpart[12] of the Magdalenian was, like it, specially equipped for reindeer hunting. The flint repertory is of pure blade type with end-scrapers and several varieties of graver; a blade ending in a narrow point or awl is particularly common. The most distinctive flint implement, however, is a tanged point with a single shoulder. As a piece of equipment, presumably a dart-head, this can be compared with the shouldered points of the Gravettians, but the form is different. Reindeer antler was freely used for tools, though not perhaps with quite all the skill of the Magdalenians; the repertory included a single-sided barbed harpoon-head, recalling the Magdalenian but differing from it.

*The Creswellian Culture*

This can be regarded as the English counterpart to the Hamburgian and related cultures of Holland and north-west Germany, although the development probably took place locally. The blade tools, and particularly backed knives, became smaller

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until they approached true microliths and included geometric forms such as the trapeze.

*The Magdalenian Culture*

The Magdalenian reindeer-hunters' culture, with its large Gravettian inheritance, includes many kinds of the end-scrapers, gravers and other blade tools characteristic of the Upper Palaeolithic tradition, but is specially distinguished by a wide range of implements beautifully made from bone, ivory and reindeer antler. These show a rapid evolution towards greater efficiency and more perfect execution until towards the latest phase of all when deterioration set in, a mark of the general decay of the Upper Palaeolithic way of life. This progressiveness is best exemplified in the history of bone lance- and harpoon-heads. From the earlier phases of the culture there are only simple lance-heads with polished points and bases either bevelled to fit into a shaft, or cleft to receive one (the difference between the *split* base of the Aurignacian and the *cut* fork of the Magdalenian is invariable). In the middle of the culture's history true harpoons with detachable heads appear; at first they are notched along both sides to increase their grip in the wound. Later very finely cut barbs like curved teeth are carved along one side of the head, and then later still it evidently proved more effective to have rather larger barbs set alternately on either side of the head. At first the double-sided barbs were as well carved as the single, but at last, when degradation was setting in, they became angular, coarse and unsightly. Harpoons have to possess some means of fastening the line which is to remain attached to the head when it leaves the shaft; in the French Magdalenian harpoons this is provided by a raised collar just above the pointed base, while in Spanish specimens there is usually a perforated lug.

Other notable additions to the long list of bone and antler implements are spear-throwers, often magnificently carved with game-animals, *bâtons de commandement* far more numerous and ornate than the Aurignacian prototypes, antler hammers, fish gorgets (the straight forerunner of the fish-hook) and eyed needles that appear to have been ground down in sandstone grooves. In very many ways, most strikingly in the harpoons and spear-throwers, this hunting and fishing equipment of the last of the great European Palaeolithic cultures resembles that in use among the Eskimo until recent years.

*The Emiran, Athlitian and Keberan Cultures*

These cultures represent, or partially represent, the eastern extension of the Eurasiatic blade culture tradition. The Emiran is a transitional culture comparable in this respect with the Châtelperronian, with a strong survival of Levalloisian forms and technique. It includes a rather squat-backed blade, and, as a diagnostic type, the Emira point, a small triangular blade trimmed at the base as though for hafting. There succeeded a period of true Aurignacian dominance (p. 83) before the Athlitian which, while showing a fairly direct descent from it, nevertheless possesses a distinct individuality in implements made largely on tabular flint. A simplified form of the keeled scraper and beaked graver preponderates.

The Keberan shows a sharp break with the previous cultures, and should certainly be regarded as being as much transitional between the Upper Palaeolithic and Mesolithic traditions as is the Capsian. It maintains the standard line of

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gravers and scrapers, but also includes true microliths, including a few geometric forms. The characteristic tool is a small blunted-back blade sharply pointed at both ends.

## 3. THE UPPER PALAEOLITHIC CULTURES OF THE INDIAN SUB-CONTINENT

Knowledge of this period in the Indian sub-continent is still too slight to allow any clear demarcation of cultures. But it is beginning to be clear that a distinct Upper Palaeolithic tradition can be recognized which embodies something at least of the blade-and-burin techniques. In the north the appearance of flake blades in the Late Soan is not sufficiently definite or accurately dated to be worth consideration as yet, but in central India in the valley of the Pravara (a tributary of the Godavari) an industry overlying the latest Acheulian horizons has very real Upper Palaeolithic characteristics. The implements, made of agate, chert, chalcedony and jasper, include scrapers, blades, a few burins and cores. Blades about an inch long with blunted back merge imperceptibly into a wide range of end and side-scrapers. This 'Upper Pravara' has been likened to the Kenya Capsian and may represent the beginnings of a similar Indian development.

A further suggestion of a true Upper Palaeolithic tradition comes from Khandivli about a score of miles north of Bombay. Here in beds of clay and gravel again lying above a horizon containing Acheulian hand-axes, was a developing blade industry. At the uppermost level it included quite evolved burins of the angle, polyhedric and parrot-beak type.

## 4. THE UPPER PALAEOLITHIC CULTURES OF SOUTH-EASTERN AND EASTERN ASIA

An extraordinary slowness in development characterizing this vast region meant the survival right through the end of Palaeolithic times of the ancient chopper-chopping-tool tradition. As far as is at present known the intrusion of new forms, evidently deriving from the Eurasiatic blade-tool source, can be detected only in north China and Siberia.

### *The Ordos Culture*

This north Chinese Upper Palaeolithic culture still manifests a strong survival from the Choukoutienian, including choppers made on pebbles. There is also a Moustero-Levalloisian element represented by points and side-scrapers. But the blade tradition shows itself in very simple forms of graver and backed blade; indeed, the presence of blades up to 15 centimetres in length shows that this Upper Palaeolithic technique was fully mastered.

### *The Baikal Culture*

The flint implements included in this Siberian culture show almost the same blending of old and new forms as does the Ordos. Here, however, the addition of an array of bone tools, as well as the famous statuettes from Mal'ta, makes the Eurasiatic, and presumably mainly Gravettian, intrusion more clearly evident. Bone tools of western type include awls and eyed needles. At one site large laurel-leaf points flaked on both sides were associated with barbed bone points; the date,

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however, appears to have been late, and there is no doubt that these Palaeolithic types last well into post-glacial times.

## 5. THE UPPER PALAEOLITHIC AND LATER STONE AGE CULTURES OF AFRICA

### *The Middle Stone Age Cultures of South Africa*

These confusingly named cultures which followed the Fauresmith during late glacial times no longer include hand-axes or cleavers but flake implements of Levallois manufacture and shaped into slender lance-points flaked on one or both sides. The latest of these cultures show a microlithic element.

### *The Stillbay Culture*

This is one of the African cultures in which the Levallois tradition lingers. Most tools are made on Levallois flakes; they include the usual points and side-scrapers, but are mainly distinguished by points flaked on both sides and suggesting diminutive hand-axes. In the latest Stillbay of Kenya these points had become leaf-shaped and very fine, apparently worked by pressure flaking.

### *The Tumbian Culture*

This culture of central Africa is now often included as a late phase of the Sangoan. It shows a survival of Acheulian forms with a pick-like tool derived from the hand-axe.

### *The Sebilian Culture*

This Egyptian culture is derived from the Levalloisian, and in its early form consists of implements made on very small Levallois flakes and with steeply retouched edges; a squat form is particularly characteristic. Later, although the Levallois technique continues, tools become smaller, first with backed blades of lunate form and finally with true microliths resembling the Natufian types. This latest Sebilian can be accepted as a Mesolithic culture.

### *The Aterian Culture*

This north African and, perhaps, Spanish flake culture is thought to be descended from the Mousterian. Its most typical manufacture is a small tanged and barbed point, usually with a plain flake surface on the underside and flaking over the upper. It has exactly the appearance of an arrow-head and has brought the Aterians the credit of having invented man's first long-distance weapon—the bow and arrow. The Aterians also made small leaf-shaped lance-heads recalling Solutrean workmanship.

### *The Capsian Culture*

This is the only true blade culture in Africa other than its coastal counterpart the Mouillian. Starting as a late Upper Palaeolithic culture with the usual repertory of blades, scrapers and gravers, in its Mesolithic phases it developed microliths including such so-called geometric forms as the triangle, lunate and trapeze, all of them made on bladelets and blunted where required with steep retouch. All were intended for hafting as arrow-points, knives or barbs.

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## 6. THE PRE-AGRICULTURAL CULTURES OF AMERICA

The cultures which developed in North and Central America from the time of the first settlement fall into two main groups, roughly divided by the Rocky Mountains. These are the Palaeo-eastern and the Palaeo-western. A possible subdivision of the second of these is the Desert culture of the Great Basin, and this term is now being extended to include a much wider range of loosely related cultures extending from the Valley of Mexico to Oregon and from the Pacific coast to the eastern foothills of the Rockies.

These two groups, which overlap extensively, particularly in the south-west of the United States, are the outcome of different modes of life. The Palaeo-eastern, characterized by lanceolate, pressure-worked projectile points, was based on big-game hunting; the Palaeo-western, in which projectile points were generally less important and core tools, choppers, keeled scrapers and grinding-stones were typical, depended economically on food-gathering, and especially on the collection of vegetable foods.

A third tradition, the Palaeo-northern, spread over Alaska and Canada at a rather later date.

### *The Sandia Culture*

The projectile heads typifying this probably earliest of known American cultures are flaked on both sides and have a broad tang with a single shoulder. What appears to be the older form is somewhat rounded: leaf-shaped save for the shaping of the tang and shoulder; a better-worked and perhaps slightly later form is much narrower and more nearly parallel-sided, sometimes with a concave base. These flint points have been found in association with bone points very similar to themselves in shape, and with beaked scrapers and a variety of utilized flakes.

### *The Clovis, Folsom and other Fluted-Point Cultures*

These cultures are all distinguished by varieties of a projectile head with a single long flake removed on either face to make central concave flutings or channels. These two flakes were removed *after* the point had been fully flaked over both faces. This technique is not known from any other part of the world.

The Clovis point appears to be the most primitive form typologically, and was probably also the oldest in time. These heads are larger than the better-known Folsoms, and the fluting does not extend far up them; they have the same hollow base, but there is no fine retouch along the edges. Clovis points have often been found lying embedded among the remains of mammoth. They have also been found in association with tapering, cylindrical bone shafts with one end bevelled, possibly foreshafts used with spear-throwers, or (more probably) themselves projectile points comparable to the earlier bone lance-points of the Old World Upper Palaeolithic.

The most numerous, widespread and best-known of the fluted points are the Folsom, a name which was long applied to all fluted types. The typical form is leaf-shaped but with a deeply hollowed base giving barbs, which, however, do not project outwards but continue the line of the sides. The greatest width tends to be about two-thirds of the way towards the tip, with a slight taper towards the base. The edges show fine retouching, and the workmanship of the pressure

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flaking is excellent. These points fall roughly into a longer and a more stumpy version probably designed for different species of game. Also typical of the Folsom culture are two types of knife, one fluted like the point but with a blunt base, the other made from the spall removed for the fluting. Folsom points have also been found associated with many types of scraper, including nosed and keeled, with spoke-shaves, drills or awls, sharp points probably used for engraving bone (not gravers in the Old World sense), cores shaped into rough choppers, and hammer-stones. They also occur with bone awls, punches and points, and with perforated slivers of bone that may be either needles or pendant beads.

Another group is distinguished, mainly on geographical grounds, as the Eastern Fluted points; they have a general resemblance to the Clovis points, but a special Ohio variety has a constriction above the base giving the tangs a projecting ear-like appearance.

*Eden, Scottsbluff, Plainview and other Parallel-Flaked Points*

This group of point types, thought to be a little later than the fluted forms, were formerly loosely known as Yuma points but are now subdivided. All of them show fine pressure flaking making long parallel-sided flake scars. The Eden point is long, slender and almost parallel-sided although with a slight taper towards the point; there is a broad central tongue at the base with shoulders too slight to be called barbs; the flaking goes horizontally across the point up to a pronounced median ridge. The Scottsbluff (widely distributed in North America) is very similar except that the blade is wider, the median ridge less, the shoulders more pronounced. The Eden and Scottsbluff points were undoubtedly sometimes used by the same people and it has been recommended that the two should be combined as the Cody Complex. The Plainview point has no shoulders but is parallel-sided often with a slightly hollowed base; the outline is relatively rather more squat than the previous varieties. They have been found associated with various scrapers and blades which were probably used as knives. Other forms identified, but with no kind of cultural connotation, are the Brown's Valley point, a broad thin leaf-shaped variety with flat or slightly hollow base; the parallel ripple flaking runs obliquely instead of horizontally across the blade. Points with this oblique flaking (usually running downwards from left to right) can be seen as forming a sub-group within the parallel-flaked point family, but they have not as yet been assigned any general name. The San Jon point is like a thicker flat-based Plainview point. Some of these ripple-flaked types must have persisted into late post-glacial times.

## 7. THE MESOLITHIC CULTURES OF EUROPE AND WESTERN ASIA

*The Azilian Culture*

Some gravers and scrapers on blades survived from the Magdalenian ancestry of this culture, but generally it consists of great numbers of microliths, including geometric forms made by the notched or micro-burin technique. Small round thumb-scrapers are also frequent. The most typical ingredient of the culture (other than the painted pebbles, p. 193) is a harpoon-head usually made in red-deer antler. It is a very poorly made affair when compared with the Magdalenian fore-runner, flattish in section with barbs roughly nicked out on one or both sides.

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The attachment was sometimes by a projection at the base, more typically by means of a hole cut through the shaft. It has been suggested that in the latest form the harpoon was made thinner and the perforation higher (about half-way up the shaft) in order that the head should 'toggle' or twist round sideways in the wound, so securing it more firmly than any barbs could do.

*The Sauveterrian Culture*

This culture, formerly known as the Lower Tardenoisian, represents the last gasp of the dying Upper Palaeolithic way of life in post-glacial Europe. At a number of French sites it is found stratified between the Azilian and the true Tardenoisian, but it was not itself derived from the Azilian. Rather it was a parallel development from Upper Palaeolithic traditions. While scrapers and a few gravers maintained these traditions, microlithic tools dominated and the micro-burin method of manufacture was employed (p. 154). While tiny blades were used by the Sauveterrians, the little pointed flake was the most typical blank from which these deft craftsmen worked up their finished microliths. Among these, while elongated triangles, sometimes minute in size, and narrow steeply battered points, were made, penknife, crescent and lanceolate shapes were usually turned out in the greatest numbers. While best known from France and Britain, the Sauveterrian also extended farther north and east. In some regions it lingered on to the end of Mesolithic times.

*The Tardenoisian Culture*

The French Tardenoisian, which seems to be centred on the region of the Île de France, can be taken as representative of a number of related cultures flourishing in Atlantic times from the Iberian peninsula and the south of France to the Low Countries, Germany, Poland and south Russia, and given unity under the title of the blade and trapeze cultures. They include microliths, particularly broad-based points, and the micro-burin technique was used as in the Sauveterrian. Most characteristic, however, were various trapeze forms, some presumably used as arrow-heads, made across the breadth of broad flint blades (Fig. 13). Characteristic of the Tardenoisian in particular was a trapeze in which one of the angles was a right angle. It is not known whether the blade and trapeze cultures grew up locally in Europe, perhaps as a result of Neolithic influences on Mesolithic traditions, or whether they represent migratory movements. If the latter, there may have been two main streams, one westward from south Russia, one northward from the Mediterranean. It is possible that their creators, though still largely following the Mesolithic hunting and food-gathering way of life, had already become herders.

*The Ahrensburg, Remouchamps, Swiderian and other Tanged-Point Cultures of the North European Plain*[13]

These cultures deriving from the Hamburgian and other final Palaeolithic sources in northern Europe all possess a closely similar range of implements only to be distinguished by minute difference of manufacture, particularly in the shaping of the tangs of the characteristic points. Gravers and round end-scrapers continue from the Palaeolithic; other implements are microlithic but do not show the perfect geometric forms typical of the Tardenoisian and were not made by the

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micro-burin technique. The tanged points generally have one oblique side blunted by steep retouch and the tangs formed by retouching from the flake surface; sometimes, however, the retouching is on the upper surface also. The Ahrensburg is distinguished by little points with hollow base,[14] and the Remouchamps by the inclusion of triangles. Bone and antler implements appear to be limited to simple points. The Komsa and Fosna cultures represent the spread of the tanged-point tradition down the coast of Norway (p. 98). The flint tools repeat the types already described, but as these cultures survived late, they include the wood-cutting core axe borrowed from the Maglemosians.[15]

*The Lyngby Culture*

This culture of northern Germany and Poland, Denmark and south Sweden is known only from heavy reindeer antler axes, adzes and hafts. In each the base of the antler is used, the massive brow tine being cut obliquely parallel with the handle for the axe, obliquely at right angles to the handle for the adze, and straight across for the haft. The edges of the cutting-tools have been ground on stone, while for the haft the tine is hollowed out—but what was hafted is unknown. It is believed that the Lyngby people also used rather large, coarse versions of the tanged point of the preceding period (Ahrensburg, etc.). The Lyngby axe is the oldest true handled axe in northern Europe.

*The Maglemose*[16] *and Kunda Cultures*

These cultures stretching across northern Europe from Britain to the east Baltic countries show an equipment specially designed for tree-felling and carpentry on the one hand and fishing and fowling as well as hunting on the other. Working in bone and antler was highly developed, coming second only to the Magdalenian in skill and variety. Several types of graver and rounded scrapers still persist from the Upper Palaeolithic repertory, but their numbers are not very great as microliths predominate. The most highly evolved and minute forms of the Late Tardenoisian are normally absent, and little blades blunted obliquely or down the whole of one side are the commonest types. The micro-burin technique was employed but perhaps not very extensively. Local variations are noticeable within the Maglemosian microlithic equipment, most conspicuously in the more evolved and precise forms, including many triangles, found in Zealand. The composite hafting of blunted microliths in wood is proved by the occurrence of two close together in the breastbone of an aurochs at Vig, Zealand. The micro-blades found in slotted bone handles show no retouch, perhaps because the bone could resist a sharp edge as wood could not.

The important innovation among the flint implements in both these cultures is the heavy axes, adzes and picks made on cores. All of these are sharpened (and were resharpened) by means of the intersecting *tranchet* flakes (p. 154). Some of the more rod-like forms may have served as chisels. There begin to appear in the Maglemose culture a few examples of the *grand tranchet* or flake axe characteristic of the succeeding Ertebølle culture.

The introduction of implements pecked out of hard, igneous rocks and ground down for points and cutting-edges is an important innovation in the Maglemose culture; whether it began without outside influence cannot be quite certain, but

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it seems likely that this kind of stone-work developed out of grinding and polishing bone and antler—as in the Lyngby axes. They include oval pebble-axes with ground edges, and pebble hammer-stones with pecked finger-grips, round mace-heads perforated by drilling from both sides (probably with a stick and grit), and, by far the most elaborate form, a kind of perforated pick, sometimes with projections on either side of the shaft hole. These advanced forms may have outlasted the Maglemose period.

Wooden tools and weapons include fire-hardened points probably used as pikes; throwing-sticks made at the junction of branch and trunk; 'sleeves' for the reception of axes and adzes; paddle-rudders of willow (the earliest examples known in the world); arrow-shafts and the fine elm bows with thickened handgrip and flattened staves known only from the Holmegaard bog in Denmark. Fire seems often to have been used to help out flint tools in Maglemose carpentry.

The range of tools made in bone and antler is very great, and most typical and important among them is a series of bone points, some barbed, some set with flints. The range is too great for description. In the majority of carved specimens the barbs occur on one side only. The flints set in grooves, on the other hand, are invariably double-sided, the bone tapering to a sharp point above them; the flints are sometimes set to project slightly like rather small barbs, but are sometimes almost parallel with the shaft and continuous as though their prime purpose was to cut. Of the various barbed bone points, a few with large barbs and a perforation were probably true harpoons, but most of them were fish-spears, or leisters, and fowling weapons. For both these purposes one, two or more points (up to as many as eight) would have been mounted together on a wooden haft. Both in the Maglemose and Kunda areas such points have been found in pike skeletons, and it is likely that spearing these great fish was one of their principal uses. A rare type of Maglemosian arrow with conical head, to judge from recent north Russian analogy, was probably used to shoot fur-bearing animals with minimum damage to the pelts.

Other bone tools were axes and adzes with and without haft holes, sleeves for hafting flint axes, awls for leather-work, a kind of broad needle probably used for netting, and fish-hooks—seemingly a Maglemosian invention, in which the curved base appears generally to have been opened by boring and not cutting. A type of pointed tool made of elk bone which occurs in the Kunda culture in the east Baltic region has been confidently identified as an ice-pick.

When it is remembered that the Maglemosians and Kunda people also had devised good fish-nets and fish-traps, and the Kunda people also the sledge, it becomes apparent that although they failed to go beyond hunting and food-gathering, the extreme skill and thoroughness with which they exploited their difficult environment was worthy of the successors of the gifted Upper Palaeolithic societies.

### *The Ertebølle Culture*

The equipment of this Danish and north German culture reveals it as a more or less direct descendant of the Maglemose, but with considerable changes of emphasis. The existence of pottery in the kitchen middens (p. 161) seems to indicate an outside influence not visible in the tools and weapons.

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The Ertebølle people made core axes and adzes, but their number dropped sharply in relation to the *grand tranchet* axe which was made on a stout flake. Similarly, although there may be said to be a microlithic element in the Ertebølle culture, it is almost exclusively represented by trapezes, including many long narrow varieties, all of which were hafted as arrows with a cutting-edge instead of a point. In Egypt this form was used exclusively for fowling, and this may well have been true also among this northern people. It is a curious fact that in its inclusion of a large number of different types of graver and of convex, straight and concave scrapers on the ends of blades (sometimes up to six inches long) the Ertebølle culture is nearer to the Upper Palaeolithic tradition than is the intervening Maglemose. Pecked and ground stone maces continue to be made with hour-glass perforations, but new types of stone implements are the round-butted axe sometimes with a gouge-like edge (Walzenbeil), and a type (the Limhamm axe) which, as one face is much fuller than the other, must presumably have been hafted as an adze. Among bone tools points are very rare, while a little comb has been invented. Perforated antler axes for a wooden haft are very common, whereas adzes are few. A new type of antler axe uses a tine for the perforation, thus securing a kind of socket or collar for the haft.

### *The Asturian and Larnian Cultures*

The Asturian culture, belonging to poor strand-loopers on the north coasts of Spain and Portugal, includes in its piled shell middens rough pebble-axes and quartzite scrapers but is typified by the Asturian pick, a large pebble-tool trimmed to a point at one end and doubtless used to detach the limpets that formed a main item of diet.[17]

The Larnian of the north-east coasts of Ireland has sometimes been linked with the Asturian but with little reason. This Irish culture shows an element of the northern forest culture (presumably Maglemosian) impinging on an earlier Mesolithic tradition. It is represented by coarse core axes and by the Larne pick, a thick curved tool with a deep keel along the upper surface.

### *The Natufian Culture*

This culture centred on Palestine and extending also into Egypt, Syria and Lebanon has been several times quoted for the transitional position between a hunting and agricultural economy revealed in its material equipment. The Natufian is a true microlithic culture; microlithic forms comprise many backed blades with square or slightly oblique ends, triangles, a few trapezes, and most characteristic of all, crescents (or lunates) that were probably used for tipping reed arrows. Larger implements include tanged arrow-heads, several types of graver, scrapers on the ends of blades and picks that may have served for turning the soil. The famous sickles are straight with handles sometimes ornamented with animal carvings, the blade formed by backed microliths set in a groove in the bone. Many blades show the siliceous gloss along the edge said to come only with cutting straw. Cylindrical pestles are pecked from hard rocks, the handles slightly ornamented; cup-like stone mortars have been greatly deepened by wear, presumably grain-grinding, and in one instance the bottom has been worn right through.

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## 8. MESOLITHIC CULTURES OF CENTRAL AND EASTERN ASIA

There is no doubt that peoples with true Mesolithic cultures had penetrated far into south-western and central Asia in post-glacial times, but discovery is still in so early a stage that cultures cannot be properly defined. Sites in eastern Iraq (Zarzi and Pelgawra) seem to show a very late, perhaps Gravettian, type of Upper Palaeolithic culture verging towards the Mesolithic with microliths and the micro-burin technique, while Karim-Shahir, a fully Mesolithic site, shows less precise and well-made forms among its microliths. This site has been compared with two caves (Hotu and Belt) in the foothills of the Elburz mountains in north central Iran. At the Belt cave, however, as well as backed blades and other rather ill-defined types comparable with Karim-Shahir, there are crescents and rough geometrical microliths—triangles and trapezes. Moving northward from Iran into western Turkmenia there is scattered evidence for Mesolithic settlement. The most certain comes from the cave of the Dam-Dam-Cheshme where there was a Mesolithic horizon with large crescents recalling those from the Belt cave, as well as small pointed blades with steep retouch, miniature disk scrapers and conical microlithic cores used as scrapers. There are no true geometric forms here, and the link with Iran seems at present to be a weak one. Farther east in Uzbekistan there are many surface sites of uncertain age, but the cave of Katta-Kurgan has a pre-pottery level that seems more certainly to be Mesolithic. There is little doubt that, as would be expected, Mesolithic culture survived in this central Asian region well after the Neolithic phase had begun in Iran and other regions to the south-west.

In India, Mesolithic cultures are equally ill-defined, and judgement is further confused by the fact that the manufacture of microlithic flint tools undoubtedly continued not merely into the Neolithic Age but well on into historical times. At Khandivli just north of Bombay, one of the very few sites to have yielded an Upper Palaeolithic culture, this blade-and-burin culture seems to have developed into an overlying Mesolithic with microlithic blades, points, crescents, awls and fluted cores. The same range is represented at two nearby sites at Marve and Manori Point. Microlithic cultures recognized in the Gujrat region of Bombay State have not been dated, but at Langhnaj a microlithic industry including lunates seems to be definitely 'pre-pottery' and probably a true Mesolithic industry. Dentalium shells and a series of crouched dolichocephalic skeletons appeared to be contemporary with the microliths. Together these sites suggest that more research would establish a clear-cut Mesolithic culture in western India. In the east there is evidence for a similar post-glacial reduction of a blade culture to a microlithic one in the Krishna and Godavari valleys. Here the microliths include backed blades, crescents, triangles and fluted cores. Farther south in the Tinnevelly district of Madras microliths were found in fossil sand-dunes, but their age is uncertain, and this is true also of many sites in central India. Mention should be made of a non-microlithic culture identified at Sukkur and Rohri in Sind, which includes many flakes, tools described as 'hand-axes' and long blades and fluted cores. This culture may date in time from the late Mesolithic and has been thought to be the source of the ribbon-flake blades of the Indus civilization.

In the far east of Asia, it seems that both in the Yenisei-Baikal regions of Siberia and in the Ordos region of northern China the curious blend of Upper

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Palaeolithic blade tradition with the far older chopper-chopping-tool inheritance continued through the post-glacial millennia, possibly even into Atlantic times. No microlithic cultures have been identified there. Great numbers of surface sites have been found throughout Inner and Outer Mongolia showing a mixture of Neolithic with microlithic forms of tool. The great bulk of material is undoubtedly of the later age, but it is probably right to recognize a Mesolithic sub-stratum perhaps dating back to the sixth millennium BC. The one stratified site in which a pure Mesolithic stratum was present was at Shaba-rakh-usu, Outer Mongolia, while there is a comparable culture without the usual admixture of axes, arrow-heads and other Neolithic forms at Ikhengung, Inner Mongolia. The microliths are very neatly made on narrow blades struck from little fluted cores. Awls, perforators of all kinds and small end-scrapers are frequent types and geometric varieties are lacking.

A microlithic industry that may be classified as Mesolithic has been found among the sand-dunes of the Lo river, in the province of Shensi. The microliths include points, triangles, round scrapers and fluted cores.

## 9. THE MESOLITHIC CULTURES OF AFRICA

It has already been stated that the latest phases of both the Capsian and Sebilian date from post-glacial Mesolithic times. The Upper Sebilian of Egypt has much in common with the Palestinian early Natufian, even while keeping small forms of the Levallois flake and tortoise-core as a mark of its descent from this culture. Gradually Mesolithic cultures supplanted the belated descendants of the Acheulian and Levallois tradition throughout east, central and South Africa. In South Africa these so-called Late Stone Age cultures began about six or seven thousand years ago and lasted until recent times.

### *The Magosian Culture*

In east, South and central Africa variations of this culture are the first to include true microliths, even while keeping many forms from the earlier Middle Stone Age cultures. In Kenya the latest Magosian sites have pottery, sufficient proof of its late survival.

### *The Wilton Culture*

This is a true microlithic culture of the African Late Stone Age; probably it began about 4000 BC and thus overlapped in time with the end of the European Mesolithic Age. As has been explained, it was still in being when Europeans reached South Africa. It is ubiquitous from Kenya to the Cape, and is remarkably uniform, showing less regional variation than the Magosian. In the Wilton culture the old prepared core technique, still lingering in the Magosian, was discarded at last and the typical microliths were made in the true tradition of miniature blades and fluted cores. They include crescents and other geometric forms and numbers of small double-ended and thumb-nail scrapers. What has been distinguished as the Wilton of east Africa still includes a small, degenerate form of Stillbay point. Pottery may have incised decoration with chevrons and other geometric designs.

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*The Elementeitan Culture*

This is a microlithic culture, descended from the Kenya Capsian, prevalent in east Africa in very late Mesolithic times. Microliths include crescents and other backed bladelets and other characteristic tools are double-edged blades with the bulb trimmed away and probably hafted as knives; end-scrapers, a few gravers and bone awls. The pottery has incised decoration and both round and flat bases occur.

*The Smithfield Culture*

This is a non-microlithic culture roughly contemporary with the Wilton and lasting equally late. Its characteristic tool is the end-scraper.

*The Late Stone Age Cultures of Central Africa*

The Magosian gave way to three Late Stone Age cultures in central Africa: the microlithic Wilton in more open parkland and scrub, the Smithfield in the dry valley of the Middle Limpopo, and the Nachikufan of forest country. This forest culture seems to have begun by 4000 BC and lasted until two or three centuries ago. Microliths include the transverse edge arrow-head. Later a tree-felling and wood-working equipment of ground and polished axes and adzes was adopted.

## 10. POST-PLEISTOCENE CULTURES IN AMERICA

There is perhaps insufficient justification for a division between late glacial and post-glacial (terms which of course include the corresponding pluvials) cultures in America, as they show no such sharp distinction as that which separates the Upper Palaeolithic and Mesolithic cultures of the Old World. Although chronology is still very unsteady, there is every reason to suppose that many of the projectile point cultures already described continued well into post-glacial times. Others seem to have developed at this time; one, the Gypsum point, represented in the famous Gypsum Cave, Nevada, with its well-preserved remains of giant sloth and camel, is a long, slender diamond form. This occupation probably dates from about 8000 BC and is possibly related to the Pinto point culture, distinguished by peculiar fish-shaped points with two pairs of tangs. At about this same time, corresponding with the beginning of the Maglemose culture in Europe, hunters were first occupying the Ventana Cave, Arizona, using points very much like the Folsom but unfluted, together with choppers, gravers and scrapers. They hunted horse, ground-sloth, tapir, jaguar and wolf.

While the various hunting groups pursued such game as this with their distinctive types of projectile points, three cultures call for special distinction.

*The Cape Denbigh Culture*

This important site on the north Bering Sea coast represents a culture coming closer than any other to the Old World Mesolithic tradition, and in particular to the Mesolithic of Siberia. The equipment contains an element seeming to look back to the Upper Palaeolithic, with gravers, keeled scrapers, end-of-blade scrapers and blade knives; it also includes true microliths with micro-blades struck from little fluted cores and probably set in grooved bone or antler points. Many of these little tools are exquisitely worked with oblique ripple flaking. The Denbigh has

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many features in common with early Eskimo cultures, and it seems reasonably certain that this and related Mesolithic cultures widespread in Arctic regions from Alaska to Greenland provided the basis for the cultural tradition of the Eskimo.

*The Cochise Culture*

This culture, known from the south-west of the United States and northern Mexico, is contemporary with the later point cultures, probably starting a little before 8000 BC, but is essentially based on a food-gathering economy dependent on wild seeds, nuts and roots. Some hunting was certainly always carried on, possibly with wooden lances as no stone points are found among the implements —but the great number of thin, flat, milling stones and small *manos* are enough to show that vegetable foods were of dominating importance. Other implements found in the earlier Cochise culture (the tradition lasted until our era) are scrapers, knives and axes made by percussion and not pressure flaking.

*The Chalco Culture*

This culture from the Valley of Mexico seems to be related to the more northerly Cochise although later in date. The implements are made of basalt and include choppers, scrapers, gravers and a few points. Milling-stones again suggest some dependence on vegetable foods.

An earlier tradition with pressure flaking preceded the Chalco in the Valley of Mexico, but it is at present too little known to be given definition as a culture.

## NOTES TO CHAPTER VI

1. Professor A. C. Blanc points out that there are nevertheless exceptions to this rule, as, for example, in Italy, where the dune country along the Tyrrhonian and Ionian seaboards was much frequented by Mousterian hunters; for this reason many sites in the open air are to be found in this area. Also the well-known Mousterian sites at Saccopastore, Tore in Pietra and Monte Amiata are open-air stations. See A. C. Blanc, *Torre in Pietra, Saccopastore, Monte Circeo.*

   On the position of the Mousterian culture in the Pleistocene sequence of the Rome area: G. H. R. v. Koenigswald, ed., *Hundert Jahre Neanderthaler* (Cologne, Graz, 1958), pp. 167–74; A. C. Blanc and E. Tongiorgi, 'Studio dei giacimenti quaternari del Monte Amiata', Società Toscana di Scionzo Naturalo, *Atti*, XLVI (1936).

2. Professor J. G. D. Clark suggests that there is an alternative explanation in that the clay models may well have been in the nature of 'doodles'—shaped in idle moments from lumps of soft clay and dropped or thrown into the fire. In other words it could be that the firing of these models was merely incidental and not by design. The fireside would after all be the most likely place where such activities would be carried on.

3. P. Simonsen ['Nye fund fra Himmerlands Ertebølle Kultur', *Aarbøger for Nordisk Oldkyndighed og Historio* (1951), pp. 199–226], has described houses cut into the slope above the midden at Ertebølle itself and also at a site on the coastal slope at Vegge on a narrow inlet of the Limefjord, N. Jutland.

4. Professor L. Pericot García comments that the well-known scene of the honey-gatherers in the Cueva de la Araña near Bicorp (Valencia prov.) can also be interpreted differently: firstly, the figures appear to represent not women but two men (the basket carried in front of the lower figure should not be confused with breasts); secondly, the two honey-gatherers seem to be climbing up, not down, to the nest of the wild bees.

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See E. Hernandoz-Pacheco, *Las pinturas prohistoricas de las cuevas de la Araña (Valencia)*, (Madrid, 1924), pp. 88–93.

5. Professor F. S. Bodenheimer asserts that the *Canis matris optimae* of the Natufians has been erroneously identified as a pariah-dog, and is certainly not of 'jackal-like ancestry'. See p. 32, note 1.

6. Professor J. G. D. Clark points out that multiple settings of small, sometimes minute flints were hardly a Mesolithic invention: microliths (and indeed the notch technique resulting in 'micro-burins') were already a feature of Upper Palaeolithic cultures in the western Mediterranean.

7. Professor J. G. D. Clark affirms that the Natufians (and the Fayumis) did not use sickles, but reaping knives. The idea of cutting slots in handles (whether of bone or wood) was certainly known to the Mesolithic Maglemosians of north Europe, who employed it especially for a type of weapon-head (so-called bird-arrows).

8. In the eldest American Eskimo cultures this Mesolithic tradition of setting flint blades in the edges of projectiles is retained. See H. B. Collins, 'Eskimo Archaeology and its Bearing on the Problem of Man's Antiquity in America', American Philosophical Society, *Proceedings*, 86, No. 2 (1943), pp. 220–35; 'Origin and Antiquity of the Eskimo', Smithsonian Institution, *Annual Report for 1950*, pp. 423–67; 'Radiocarbon Dating in the Arctic', *American Antiquity*, XVIII, 3 (1953), pp. 197–203.

9. Professor L. Pericot García remarks that although the majority of scholars nowadays hold the view that the micro-burin is a waste product formed when microliths with geometric forms are manufactured from blades, there are still some authors who reckon with the possibility of micro-burins with the function of tools. In support of this opinion they point to: the appearance of micro-burins without triangles and trapezes in Upper Palaeolithic and Neolithic industries; the occurrence of 'macro-micro-burins' showing that it is not exclusively a question of a microlithic technique; and the production of micro-burins from the bulbous part or from very narrow blades, rendering impossible a simultaneous development of microliths in which geometric forms are evident, etc. See C. Barrière, *Les Civilisations Tardenoisiennes en Europe occidentale* (Bordeaux, 1956), pp. 73–82.

10. Professor J. G. D. Clark points out that some prehistorians at least have been impressed by certain Australian haftings and the recovery of early wooden objects from South Africa suggests that evidence may yet be forthcoming.

11. A further interpretation of the '*bâtons de commandement*', which is of importance for the structure of the European Upper Palaeolithic, has been given by H. Kirchner ['Ein archaeologischer Beitrag zur Urgeschichte des Shamanismus', *Anthropos*, 47 (1952), pp. 244–86]: he regards the branches of antlers with one or more perforations as drumsticks and correlates them with Shamanistic ceremonies. See also K. J. Narr, 'Bärenzeremonien und Schamanismus in der älteren Steinzeit Europas', *Saeculum*, X, 3 (1959), pp. 233–72.

12. Professor J. G. D. Clark comments that the Hamburg culture is only from a chronological point of view a counterpart of an early stage of the Late Magdalenian. It belongs to a quite distinct cultural tradition with sources in east central Europe and possibly even in south Russia. See K. J. Narr, 'Formongruppen und Kulturkreise im europäischen Palaeolithikum', 34. *Bericht der Römisch-Germanischen Kommission* (1951–53), pp. 1–40.

13. Professor J. G. D. Clark points out that since the dividing-line between the Upper Palaeolithic and the Mesolithic in temperate Europe has, in the light of climatic-geological and cultural data, generally been set at 8000 BC (Younger Dryas/Preboreal dividing-line), the Ahrensburgian, Remouchamps and Swiderian cultures are nowadays ascribed by most authors to the Upper Palaeolithic, and not, as was previously the case, in part to the Mesolithic. For seen chronologically they do not yet belong to the Preboreal, and do not display any of the cultural features characteristic of the Mesolithic. See A. Rust, 'Ueber die Kulturentwicklung des endglazialen Jungpaläeolithikums

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in Nordwesteuropa', *Festschrift G. Schwantes* (Neumünster, 1951), pp. 48–58; J. G. D. Clark, 'The Earliest Settlement of the West Baltic Area in the Light of Recent Research', Prehistoric Society, *Proceedings*, XVI (1950), pp. 87–100.

14. According to A. Rust (*Die alt- und mittelsteinzeitlichen Funde von Stellmoor*, Noumünster, Holstein, 1943), the Ahrensburgian culture is characterized in particular by tanged points. In contrast to the somewhat older and kindred Hamburg culture there is a complete absence of 'zinken' and shouldered points.

15. Professor J. G. D. Clark recalls that these 'cultures' have been treated more recently by E. Froundt ['Komsa-Fosna-Sandarna', *Acta Archaeologica*, XIX (1948), pp. 1–68]. They represent a coastal spread from the western Baltic area to northern Norway and were flourishing at the time of the Ertebølle culture. However, Froundt probably minimizes the antiquity of the first spread. An intriguing possibility is that the Fosna-Komsa culture represents an early coastal adaptation, traces of which are submerged in the western Baltic region. This in turn supports the idea that the western Baltic coastal culture stemmed from the Ahrensburgian—the source of the 'tanged points' which in turn developed into the rhombic arrows of the Carstesminde culture.

16. In this connection mention must be made of the Proto-Maglemosian, represented by such sites as Klesterlund and Star Carr. It dates from the Preboreal. See J. G. D. Clark, *Excavations at Star Carr* (Cambridge, 1954).

17. It has been suggested by Professor L. Pericot García that the Asturian in the north-west of the Iberian peninsula is much older than had previously been assumed. See F. Jordá Cordá, *Prehistoria de la región cantabrica* (Oviedo, 1957). It should also be mentioned that simultaneously there seems to have existed a similar culture in north-eastern Spain. See M. Pallarès y L. Pericot, 'Ils jaciments asturians del Montgri', Institut d'Estudis Catalans, *Anuari*, VII (Barcelona, 1921–26), p. 27.

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CHAPTER VII

# ART AND RELIGION

THE flowering of the visual arts among the Palaeolithic hunting peoples of Europe has a high claim to be recognized as the most improbable event in human history. After a million years during which development, in so far as we can observe it, was so slow that hundreds of generations might live and die without making the smallest change in their culture, men began to create works of art which can rival anything that has been achieved in the last ten thousand years. This earliest painting and sculpture illuminates the truth that essentially there is no progress in art. The ideas, the range of experience it expresses, become more subtle and varied, its associations richer, but in so far as art is the direct expression of intense imaginative experience, it does not progress. The genius of different peoples, different cultures, flowers and fades; no just judge can say that the latest shows any advance on the earliest. But that true imaginative expression (as distinct from decoration) should have appeared so soon, that truly is astonishing. So astonishing that we have to try to forgive those savants who for very many years refused to recognize the authenticity of the Altamira paintings, allowing their discoverer to die under suspicion of having faked them.

It is impossible for us to know what efforts towards this kind of expression had preceded the cave art of Europe.[1] It looks as though the *Pithecanthropi* brought back quartz crystals to their caves at Choukoutien for the sake of their sparkle, and it may well be that early men commonly took flowers, feathers, bright stones and other things whose colours and shapes for some reason please the eye, and wore them in their hair or hung round their necks. This kind of natural adornment is widespread among modern primitive peoples and may well represent a very ancient impulse. It has already been argued that the form of the best Acheulian hand-axes is fine enough, sufficiently removed from purely practical needs, to demonstrate the existence of an aesthetic sense in their makers. This is true and would have further significance if they were in fact sometimes used for symbol or ceremony. Yet although the creation of these perfect forms comes much closer to true art than the mere collection of pretty natural objects, it cannot be said to have attained it. Something nearer to it may perhaps have emerged in forms that were not visual and leave nothing to remind us of them. It is quite possible that already before the Upper Palaeolithic Age men were beginning to dance and perhaps to chant or sing. (We cannot allow our species to be outdistanced by the white-faced gibbon.) For this age itself there is evidence for ceremonial dancing, and as it has been argued that the men of

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this time were equipped with a fully expressive language, there can be very little doubt that side by side with the visual arts there developed verbal art, largely poetic, probably including epic tales, ancestral pedigrees and the kind of poetic litany now often found accompanying totemistic and other rituals among primitive peoples. But of all this, apart from a few scenes in the eastern Spanish rock paintings and the direct, strangely moving, testimony of the marks of dancing feet on the clay of cave floors, nothing survives.

Palaeolithic paintings and engraving on the walls of caves and cave shelters is almost entirely limited to western and south-western Europe and to possible examples in a number of regions throughout Africa: round the Sahara, in east Africa, Southern Rhodesia and South Africa. Unfortunately, evidence for the age of much African rock art is dubious or lacking; but it seems that although some examples date from late glacial times, much is later, and no African painting is as old as the earliest recognized in Europe. The distribution of the carved figurines, most of them 'Venuses', is different, extending eastwards as far as Siberia with the Gravettian type of culture of which they generally form part. They do not occur in Africa. Of these little carvings, some, such as the Venuses of Lespuges, Willendorf and Brassempouy, are works of art; others are hardly more than cult objects or fetishes.

It is impossible not to regard the French and Spanish regions as offering Palaeolithic art *par excellence*. Here three principal centres can be distinguished. One is in south-west France, mainly in the departments of the Dordogne, Corrèze and Vienne, with a strong concentration in the ravine of the Vézère. The second is farther south, on the northern slopes of the Pyrenees, most sites falling within the Ariège and Haute Garonne departments west of Tarascon. The third, north Spanish, centre is in the Cantabrian Mountains westwards from Bilbao, most of the caves lying to the north, between the watershed and the Biscay coast. In addition to these three regions that between them include almost all the finest cave art, there are caves with paintings or engravings in the provinces of Guadalajara and Madrid, at Parpallo on the east coast south of Valencia and in the extreme south round Malaga. While these scattered Spanish sites belong basically to the Franco-Cantabrian tradition, Parpallo and the southern group have certain affinities with a loosely defined Mediterranean province of Palaeolithic art, which comprises caves in the lower Rhône valley, on the Ligurian coast of Italy, central Italy, Apulia, and western Sicily with the adjoining islet of Levanzo. The art of this province has a high proportion of geometric and other non-representational forms. One fine engraving comes from Holland, and a remote northern outlier is a single poor specimen of engraving on bone from Creswell Crags, Derbyshire, in the north of England.

Along the eastern coast of Spain paintings occur, usually on more or less exposed rock surfaces, which belong to a quite distinct artistic tradition. Although a few authorities still hold to the view that they were executed in Palaeolithic times, the balance of opinion is now heavily in favour of

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attributing them to the Mesolithic phase in Spain. One telling piece of evidence in favour of this dating is the fact that the Palaeolithic art of Parpallo is quite uninfluenced by the style of the east Spanish paintings, although the cave lies in their midst (Fig. 28).

The art of the Franco-Cantabrian regions just defined is divided between painting, incising and relief carving on cave walls or detached blocks of stone, and *objets d'art*, many of them carved weapons, found among other remains of occupation, usually at the cave-mouth. For convenience, these two divisions are usually distinguished as cave and home art.

Home art is necessarily almost limited to the plastic forms and engraving, but some examples of small paintings on stone have chanced to survive where many more must have perished. A very large number of stones painted with both animal and geometric motifs were found in the cave-dwelling of Parpallo, Spain, most of them in the Solutrean level.

Some of the finest work, most of it Magdalenian, is found on implements, particularly on spear-throwers (Fig. 29). It consists of carving in high relief with the body of the animal most ingeniously adapted to the implement; animals treated in this way include mammoth, reindeer, ibex and a few examples of birds. The perforated antler objects known as *bâtons de commandement* (Fig. 23) were also often embellished—the flat surface offering an excellent field for engraving. Cylindrical bone rods deeply carved with gold scrolls and spirals seem more certainly to be a true ceremonial bâton or sceptre. Ornaments form another group within the range of home art, some of the most outstanding being little perforated cut-out profiles of animals' heads that were probably worn as amulet pendants. The decorated lamps and paint containers and the fish palette form another small group. Many works of home art, however, are found not on implements and other possessions, but on broken-off pieces of bone, ivory, antler and stone. As well as a tremendous range of engravings, these pieces include some fine carvings in the round, such as the horse from Lourdes and the really superb horse's head from Mas d'Azil (Fig. 29). The Venus figurines are usually found in the ordinary litter of occupation, and therefore make an additional category within the home art.

Turning now to cave art, there are a few sites such as Cap Blanc, Angles-sur-l'Anglin and Pair-non-Pair where the art is found on the walls of an inhabited cave or rock shelter. But this is exceptional. A very large proportion of cave art is found in the inner recesses of the long, narrow and often water-coursed caverns characteristic of the limestone country of south-west France and north-west Spain. Many famous works of art are in situations which must always have been immensely difficult to reach, involving the negotiation of dangerous chasms, waterfalls and the narrowest fissures. When it is remembered that the artists had first to explore these perilous, eerie galleries, the haunt of the cave lion and huge cave bear, and then to set out to execute their works with no more light than was given by torches and fat or blubber-lamps, and probably no more sure means of rekindling it than

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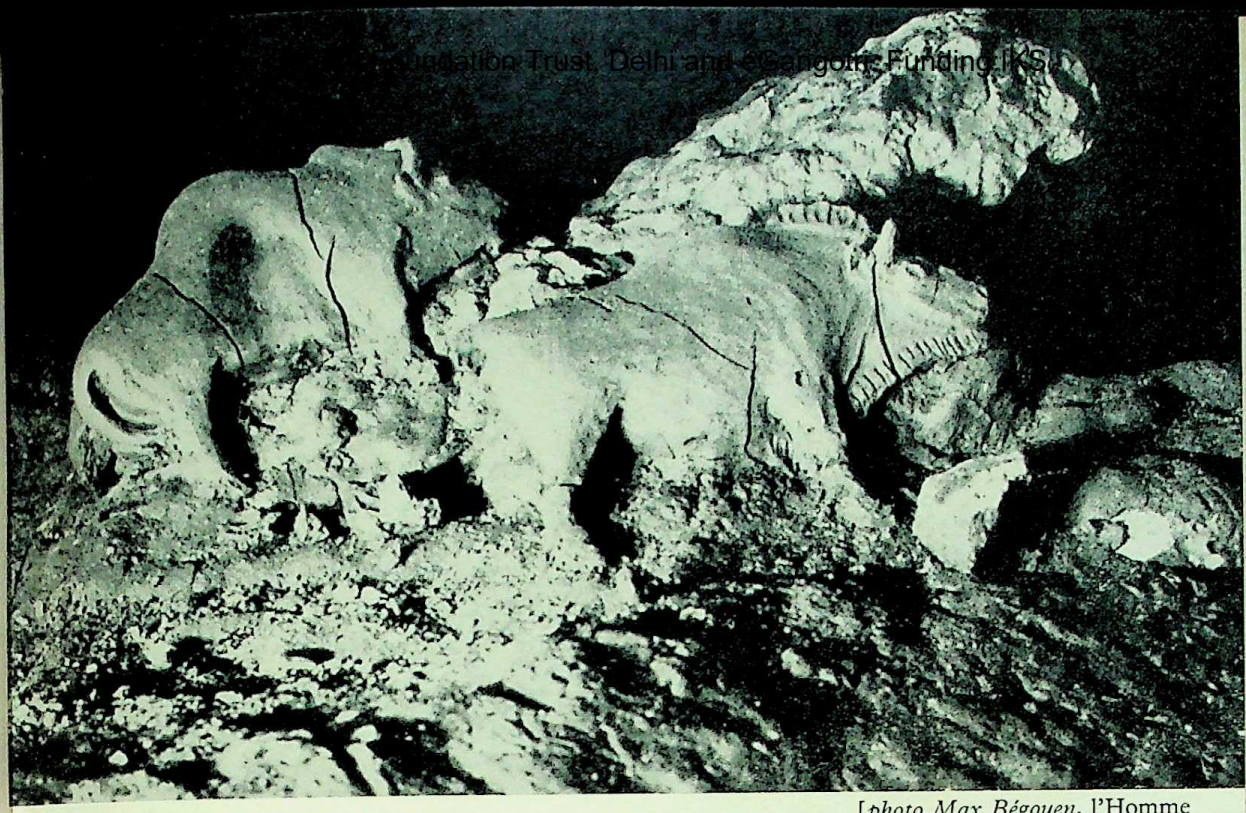
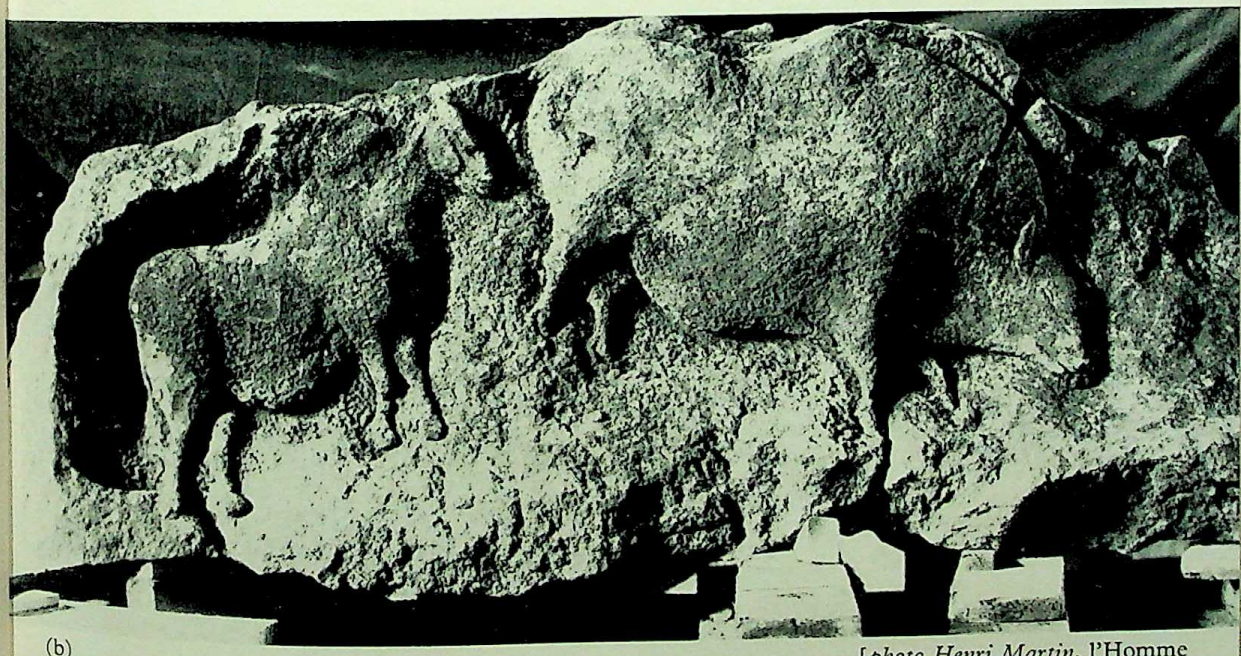


(a) [*photo Max Bégouen*, l'Homme

5 *Palaeolithic Sculptures*

(a) *Clay bison from Tuc d'Audoubert*

(b) *Wild horse and boar from the frieze at Le Roc*



(b) [*photo Henri Martin*, l'Homme

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*African Rock Paintings*

(a) *South African Bushmen. Three steatopygic figures*

(b) *The Sahara. Masked hunter*

Willcox]

[*photo R. Perret*, l'Homme

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FIG. 28. East Spanish rock-shelter paintings. A: ritual scene, Cogul, near Lerida (after Burkitt); B: hunting scene, Cueva de los Caballos, near Albocácer, Castellón (after J. G. D. Clark).



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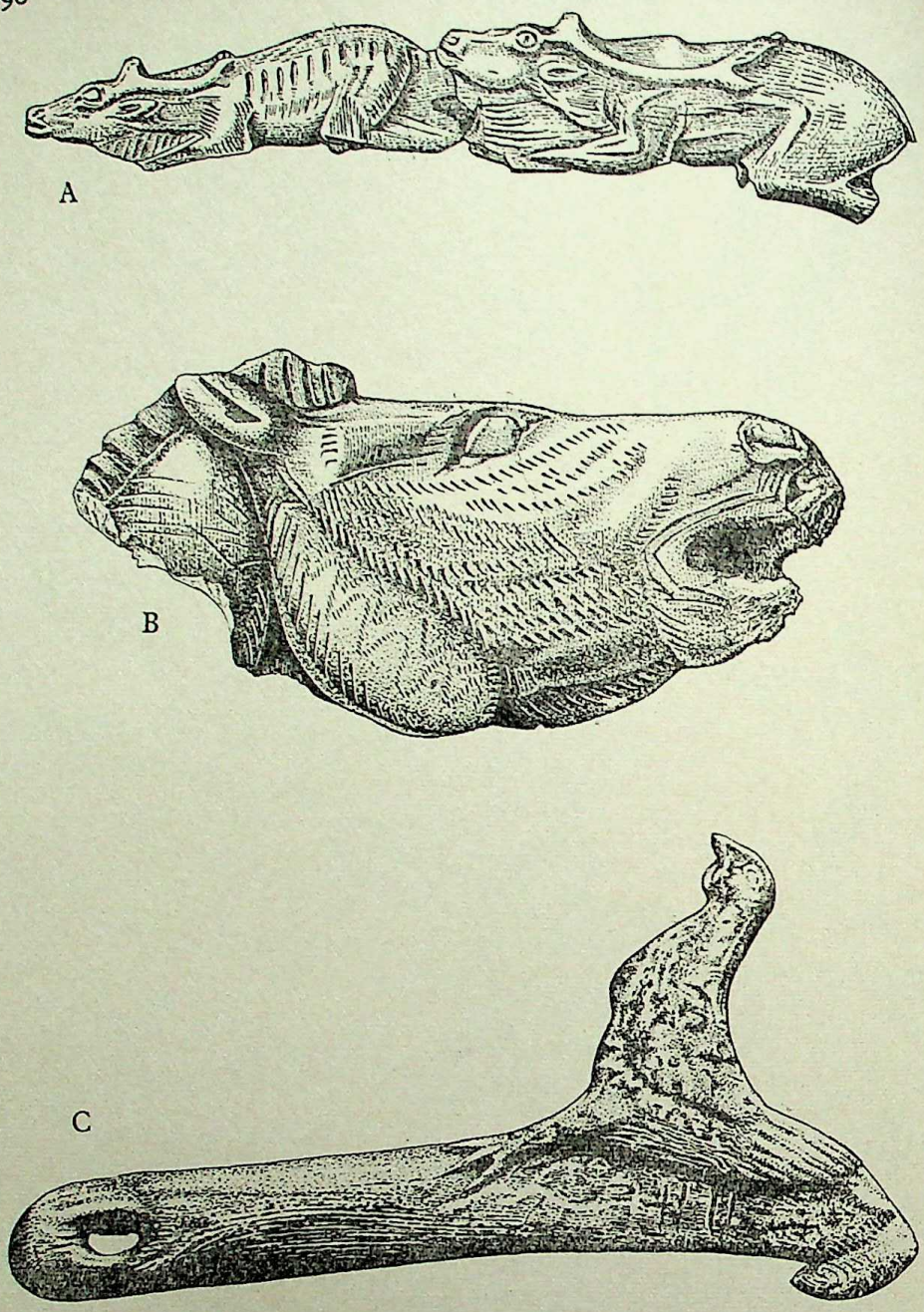


FIG. 29. Upper Palaeolithic carvings. A: reindeer, ivory, Bruniquel, scale *c.* ½; B: horse head, reindeer antler, Mas d'Azil; C: bird on spear-thrower, reindeer antler, Mas d'Azil (restoration).

a piece of flint and a lump of iron pyrites, it is obvious how determined they were to reproduce their animal images far into the depths of the earth. They deliberately and strenuously sought cave walls far removed from the familiar outdoor world and the domestic life of the cave entry.

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Many of the most famous caves are exceptionally deep and tortuous. At Font de Gaume there is a tunnel almost too narrow for a large man to squeeze through, and a crevice, difficult of access in itself, where an engraved lion and painted rhinoceros are so high up and in so cramped a space that the artist must have worked balancing on a companion's shoulders. La Pasiega demands the negotiation of a chimney with an underground river hurling itself below, followed by further long and dangerous winding, creeping and scaling before the great painted hall can be reached. Montespan must be approached by underground river, and it takes three hours to struggle through to the chamber where the bear effigy with the fallen skull and spear holes stood; Tuc d'Audoubert must also be reached by water, after which nowadays visitors must climb by means of pegs and ladders and crawl through a low tunnel to gain the place where the famous clay models of bull and cow bison lean against the rock wall surrounded by the prints of dancing feet. Further proof of the desire to make these images far into the ground is provided by caves such as Niaux, where the artists have ignored a long cave passageway where the walls were well suited to painting or engraving, and started work only at a depth of eight hundred yards from the entry.

## MESOLITHIC AND 'ARCTIC' ART

The true, imaginative art of the Upper Palaeolithic cultures can be said to have died with them. It may be that the tendency towards conventionalization and the use of abstract or geometric designs apparent in the latest Magdalenian art shows that the great naturalistic tradition was already dying, but certainly it was killed at last by the spread of forests and the ending of the old way of life. The peoples who created the Maglemose and Kunda forest cultures may have been in large part the descendants of the Palaeolithic hunters, but they had lost their artistic genius. So far as is known, all they normally attempted was the decoration of tools and weapons with very undistinguished geometric patterns. Antler hafts and axes, bone net prickers and other everyday objects were ornamented with zigzag, chevron, triangle, hatched band, lozenge, checker and net patterns, or simple lines of dots. These might be incised, pricked or drilled—probably with the help of a bow-drill. Occasionally antlers were polished and ornamented in the same style as the implements; as they seem to have had no practical use they may have served magical purposes.

Many of these motifs popular among the northern Mesolithic peoples are the same as those developed among the Magdalenians at the very end of Upper Palaeolithic times and are likely to be directly derived from them. The net and checker patterns which were new developments may well have been suggested by the roughly contemporary invention of fish-nets (Fig. 30).

In addition to the purely geometric patterns, both Maglemose and Kunda peoples exceptionally used motifs derived from human or animal forms.

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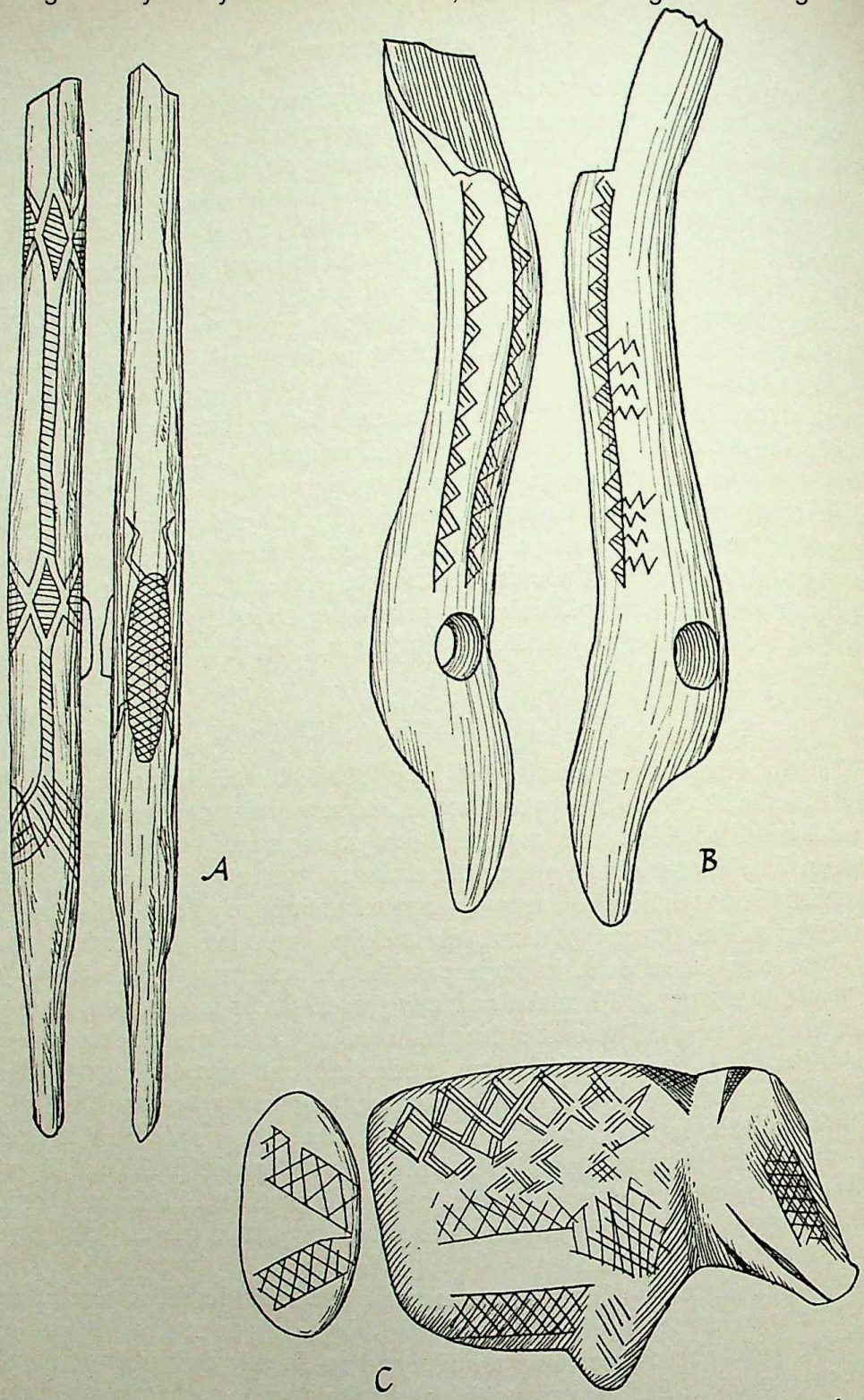


FIG. 30. Mesolithic art: engraving and sculpture. A: from Langeland island, 11/16″; B: from Ostrolçka, Poland, 9/32″; C: from Resen Mose, Jutland, 7/8″ (after J. G. D. Clark).

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Sometimes these occur on perforated plaques and were probably worn as amulets. An animal, possibly a pig, roughly carved in the round from a piece of amber and itself decorated with geometric patterns comes from Resen Mose in Jutland, but even this degree of naturalism is rare. There are one or two instances, the best known from Ystad, Sweden, where fine engravings, seemingly mere doodles, depict fish and deer in a life-like manner recalling the Palaeolithic tradition.

Of much greater artistic merit is the Arctic art represented by rock engravings and occasional rock paintings in Scandinavia—most of it found near the sea or by rivers and lakes. So, too, are the knives and axes carved with animal heads that are found in regions adjoining the Arctic but generally lying rather to the east of it in Sweden, Finland, and Russian Carelia.

It has been thought that the Arctic rock engravings of elk, bear, horse and fish, more particularly the naturalistic style prevailing along the northern coast of Norway, are derived from Upper Palaeolithic art. However, as the nearest affinities are with the earliest style, which is certainly some tens of thousands of years more ancient, it seems that the likeness is due to the common inspiration of the hunting life and not to any cultural relationship.[2]

The Arctic art may have begun in the Maglemose period, but it certainly flourished during the Ertebølle and probably lasted well on into the centuries when Neolithic cultures were being established in the more southerly regions of Scandinavia. If, as is probable, the rock engravings were related to the animal-headed axes and knives, then this late survival is almost certain, for these tools have metal counterparts in Russia and seem to have been copied from them. Thus it seems that while farming was spreading throughout the rest of Europe, in these northern latitudes the survival of the hunting life led to the occasional recrudescence of more or less naturalistic animal art, though the artists never achieved either the skill or the high imaginative expression of their Palaeolithic predecessors.

In southern Europe, with the exception of the east Spanish rock art, much of which, as we have seen, dates from Mesolithic times,[3] representational art disappeared even more completely than in the north. The Azilians have left their painted pebbles—found in northern Spain, the French Pyrenees, and eastern France. These are natural water-worn pebbles painted in red ochre with dots, bars, wavy lines and other simple devices. As the pebbles seem almost certainly to have had magical uses, these patterns are probably all symbolic, and some may be derivatives of the human figure. They have no artistic value.

The only other Mesolithic art that is worthy of special mention is that of the Natufians of Palestine. The best of their necklaces (p. 165) show a people with a good sense of design, but their masterpieces are the animal carvings in bone, particularly the fawn from the handle of a sickle. This little carving has all the feeling and expressiveness of Palaeolithic work.

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## TECHNIQUES

Before passing on to what must be the more absorbing and significant aspects of Palaeolithic art, its cultural background, styles, content, and meaning, some account must be given of the technical processes employed. This is a subject not without a general significance. The cave and home arts together include drawing, stencilling, engraving, painting, modelling in relief and in the round, sculpture in relief and in the round. Thus almost every process known to us today was developed during the first flight of the visual arts between ten and thirty thousand years ago. This remarkable fact shows how quickly the brain of *Homo sapiens* will invent new technical processes if it is responding to a well-defined challenge. Palaeolithic art was undoubtedly the work of specialists, perhaps of an artists' clan such as existed among the Bushmen, and these men must have become conscious of problems and determined to solve them. So at the very dawn of artistic creation we find this extraordinary technical inventiveness.

Starting with modelling, the bison of Tuc d'Audoubert certainly affords the best example of working in relief (Pl. 5, a). Here large masses of wet clay had been built up on a detached slab of rock and formed into the two animals, each about two feet in length and in very high relief. Details such as the eyes and mane had been added with a pointed tool, while ears and horns were neatly pinched up between finger and thumb. In their deep cavern these models kept their moisture through the millennia and when discovered by modern man showed only slight cracking. Among the few surviving examples of modelling in the round, probably a popular form but one with a poor chance of survival, are the statuettes and animal figures from Vestonice. The female figurines are made of a mixture of clay and pulverized mammoth bone; it has been shown how some of these Vestonice models had been hardened in an oven (p. 135).

The finest works of relief sculpture are those cut from the living rock of the cave walls or on detached slabs that might be either leant against the walls or laid face downwards on the floor. This kind of work, such as the frieze of life-size horses at Cap Blanc and the slabs carved with ibex, bison, reindeer and other species at Le Roc (Pl. 5, b), seems generally to have been finished with quite fine gravers, but must presumably have been roughed out with coarser tools. Gravers and gouges in all the wide range in which they were designed must have been the principal tools used for carving bone, antler and ivory for the reliefs (such as the exquisite work found on spear-throwers) and small sculptures in the round that form so delightful a part of the home art. The Magdalenians probably used their saw-edged blades for this work, and concave scrapers may have had their special uses for carving in the round. The technical mastery displayed in the best of this home art suggests that the handling of the hard materials that alone endure may have been preceded by carving in wood. When very hard substances were to be sculptured (such

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as the limestone of the famous Venus of Willendorf) the general form may have been roughed out by pecking before the final shaping was undertaken with gravers. In all this carving, and particularly in tough materials, the fact that gravers could easily be given a new edge must have been of very great advantage.

Gravers were probably also used for the incised type of engraving characteristic of the best Palaeolithic work. There have been a few instances of worn gravers found lying on ledges close by an engraved cave wall. On the other hand in both north and South Africa incised outlines appear to have been executed by peoples who did not make this type of engraving tool. Occasionally, and particularly in the Arctic art of Scandinavia, rock engraving was done not by clean incision, but by pecking—that is by a succession of small blows delivered with a pointed punch. A third method, also used in the Arctic rock art, consisted of engraved or pecked outlines being worked into highly polished grooves, probably with a wooden tool and sand as an abrasive.

Engraving was quite often combined with painting in Palaeolithic cave art; it occurs at many sites including Les Trois Frères, Font de Gaume, Altamira and Lascaux. In these cases the graver was commonly used to draw the outline, the colouring being added later; sometimes, however, it was also used to suggest fur. It is an interesting chance that the work of art which has the best claim to being recognized as the earliest portrait of a human being, the bust of a bearded man from Angles-sur-l'Anglin, combines engraving (both for outline and to represent fur on the cloak), painting and partial low relief.

It was not in the plastic arts or engraving that the hunter artists showed their greatest virtuosity and elaboration of technique. It was in painting—and here of course the preparation as well as the use of colours is involved. The usual pigments were ochres, or oxides of iron, ranging in colour from chocolate to light red, orange and yellow. The reds can be called varieties of haematite, the oranges and yellows of limonite; they occur naturally, usually mixed with clay and other earthy impurities, and little heaps of them, evidently carefully collected, have been found in cave-dwellings. Other common pigments were oxides of manganese that gave a brown and a blue-black, while burnt bone or soot was used to obtain carbon blacks. These pigments were ground to a fine powder, sometimes at least with specially made pestle and mortar. A very neatly finished conical pestle of mammoth ivory was found at Vestonice, while a stone mortar comes from the Dordogne region. The powders were stored colour by colour in holders that include stoppered bone-shafts, shells, hollow stones and even human skulls. Before application they seem sometimes to have been mixed with a water base, sometimes with fat. A bone palette from the Dordogne, beautifully carved in the form of a fish, may well have served for this mixing of colours.

All the pigments used, with the exception of the carbons which can be

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fugitive and inclined to oxidize, are absolutely permanent. Sometimes, as at Lascaux, a thin glassy skin of calcite has sweated from the limestone, covering the paintings and making them fast and impermeable—a natural glaze more effective than any devised by man. As well as these liquid colours, the artists seem occasionally to have prepared sticks of mineral pigments and used them like crayons.

The application of the liquid paints to cave walls with any accuracy must have been difficult, for although limestone sometimes offers a whitish and fairly smooth surface, it must always be more irregular than paper, wood or canvas. One very simple method was to apply them with the finger tips, usually as a single broad outline, but rarely doubled or trebled by the use of more than one finger. This finger painting is often practised by modern primitives, and a sophisticated form of it has been perfected by the Chinese. Narrower outlines were drawn with a solid point, probably a piece of sharpened wood or a quill, before being filled in with colour; at Altamira very dark outlines and touched-in details were executed by this method. Sometimes the sticks or crayons already described served for the first outlining—it appears they were used, for example, on the unfinished rhinoceros in the pit at Lascaux.

For other, more fluent types of outline there are signs that brushes were used. Some modern peoples make brushes by chewing the ends of fibrous plants, and this simple procedure may have been followed by their Palaeolithic forerunners. On the other hand it is hard to believe that such skilled and inventive artists would not have used the fur they so often handled to make themselves finer instruments. Brushes may also have been used for washes and broad shading effects, but this kind of true painting seems to have been more usually done with the fingers, or with pads of moss or fur; sometimes instead of being spread smoothly the pad was used very effectively in a kind of stump work technique. Again, a smaller pad or the end of a stick might be employed for pointillist painting.

Certain pictures, for example the lovely 'Chinese horses' at Lascaux, show such smoothly graduated tinting and shading that it has been supposed they must have been executed with some form of spray. It might be by means of blowing dry powder through a tube on to a prepared fatty surface, or again by squirting liquid colour through the lips. Experiments have proved that mouth spraying is feasible; whatever may be true of the finer kind of work, it seems almost certain that this method was used for the negative hand-impressions that are among the earliest forms of cave-painting. The open hand is applied to the cave wall and the paint squirted round it to make an image that is in fact a form of stencil.

Finally it must be recorded, although this is a matter of artistic method rather than of technique, that the Palaeolithic artists appear sometimes to have made rough sketches on slivers of bone (and probably, though lost to us, on the clay of the cave floor) to serve as studies for their finished murals.

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This account of the various media and methods so brilliantly mastered by the first known artists is enough to prove the high degree of professionalism they added to their innate gifts. We can hold in our hands their gravers, gouges and saws, their pestles and mortars, their crayons, palettes and paint-holders, the little lamps that gave them light, and picture them as careful craftsmen as well as inspired artists. Though rather simpler, their equipment was not, after all, very different from what men have used ever since.

## SUBJECTS AND STYLES

The limitations of Palaeolithic art are chiefly apparent in choice of subjects. In the Franco-Cantabrian tradition, painting is almost entirely restricted to animals, although in sculpture and to a lesser extent in engraving, men and women are more often portrayed. The animals are most commonly shown singly, and when they are in groups, as in the line of stags' heads at Lascaux, they are not composed into a scene nor related to one another pictorially. With the stylized groups of mammoth and reindeer engraved by the late Magdalenians when their art was already waning there is pictorial composition of a sort, but it is already almost schematic (Fig. 32, A). Generally the beasts are standing, walking or running, but the amount of movement put into them varies greatly. For example at Lascaux most of them, though full of an intense life, nevertheless have a kind of poetic stillness and calm about them, whereas at Altamira they are caught up in a tremendous dynamic energy. Rare and unusual attitudes have been chosen, giving a greater sense of event. Examples are the leaping cow and falling horse at Lascaux and the famous crouched bison at Altamira (Pl. 3); from these and other examples it seems that these odd attitudes have usually been suggested to the artist either by some natural peculiarity on the cave wall (the falling horse and crouched bison) or by an impulse to avoid an earlier painting (the leaping cow; Pl. 4). This latter impulse is unusual, bespeaking the true artist rather than the servant of magic and religion; more often successive studies were imposed one on the other or allowed to overlap with little care for appearances.

There are also rare exceptions to the rule that there are no scenes in the Franco-Cantabrian art.[4] One is the charming picture of a pair of reindeer at Font de Gaume, in which the female is kneeling with lowered head, while the male is bending forward towards her; it is simple enough, but there is a relationship between them and one conveying a sense of tenderness. But the one scene which might claim to be the first narrative picture in the world is in the pit at Lascaux where a man (very schematically drawn) appears to be lying dead, while before him a bison stands in a curious rigid attitude as though about to fall, its intestines hanging from its belly and a broken spear at its side. Different interpretations have been made of this scene, some of which try to include the rhinoceros standing at a short distance from man and bison; we can never know what the story was, nor whether it was an



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actual happening, or drawn from some camp-fire epic, but there is no doubt that this unique picture was composed to illustrate some event. It told a story, and this was something altogether new.[5]

The dead man at Lascaux is drawn in the stick style popular with small children, and nearly all paintings and many engravings of human beings (which are not numerous) are either schematic or childishly crude; frequently, as we have seen, they appear masked or with animal attributes. Practically never is the artist trying to express the essential character of the human body in the way that he would express that of bison and reindeer, ibex or mammoth. The nearest approach to an exception is the head and shoulders

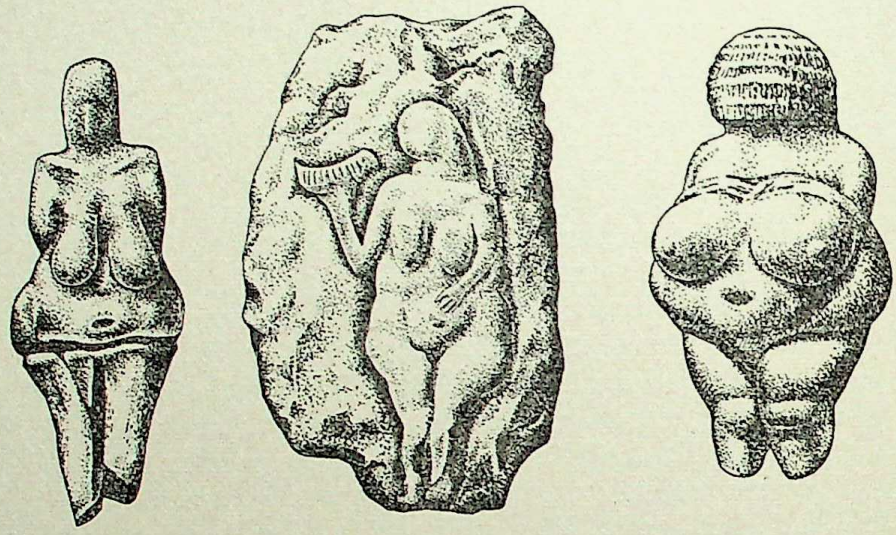

FIG. 31. Upper Palaeolithic 'Venuses'. *Left:* Vestonice, Moravia. *Centre:* Laussel, Dordogne. *Right:* Willendorf, Lower Austria (after Singer).

study of a bearded man from Angles-sur-l'Anglin, but even this is tentative when set beside the superb animal studies. There are also the engravings, full of grace and movement, in Addavra Cave on Monte Pelegrino, Sicily.

Turning to the carvings of women, and the occasional male figures found with them, we are in an altogether different realm of emotional expression (Fig. 31). The Venuses and other figurines with their much wider distribution and evident magico-religious significance within the Gravettian culture might be dissociated from the rest of Palaeolithic art if there were not several works serving to link them. Most significant of these are the women holding bison horns and the hunter from Laussel, carved in low relief on slabs lying on their face in a Gravettian cave-dwelling in the Dordogne, and the three great female figures carved on the cave wall at Angles-sur-l'Anglin. This second site is of particular importance for relating the female figures with other Franco-Cantabrian art, for here they had been carved side by side with animal sculptures of bison, ibex and horse, and furthermore were the work

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of Magdalenian artists. At both places the female figures closely resemble the Venuses, being shown naked, grossly fat or pregnant, and with little attention paid to so unimportant a feature as the head. At Laussel the faces are blank, at Angles-sur-l'Anglin the head is not represented at all.

It seems then, that although in some instances the same artist might carve an animal and a female figure large or small, the inspiration underlying their creation was quite different. In portraying animals the artist was inspired to express the essential appearance and nature of each species, achieving a form of brilliantly heightened realism; in the female figures he did not want to show the female of his kind in this same spirit of heightened realism, but rather the idea of woman as the source of all fecundity. He portrayed not woman but fertility.

The subject-matter of the predominantly Mesolithic rock-shelter art of the eastern Spanish littoral differs sharply from the Franco-Cantabrian. In that scenes and events are common, it might be said to be intellectually more advanced, but in both execution and imaginative feeling it is inferior. Not only did the east Spanish artists like to compose scenes, but they had no inhibitions against including human beings. Their paintings often show men hunting deer with bow and arrow, and there is the lively group of five warriors wearing head-dresses, also armed with bows and arrows. More famous still is the ritual scene at the cave of Cogul where a party of women clad in long skirts is loosely grouped round a much smaller figure of a man or youth (Fig. 28, A). The east Spanish paintings are usually small in comparison with the Franco-Cantabrian; there is plenty of movement in them, particularly in the hunters, but both men and beasts are rendered in a curiously attenuated and brittle convention, without either the feeling or the high realism of the greater tradition (Fig. 28, B).

African cave-painting (Pl. 6) has much in common with that of eastern Spain, though some of the animal studies are rather superior. In Libya, Southern Rhodesia and South Africa there are single animals and hunting scenes very much like the Spanish, showing the same brittleness and attenuation, the same high-stepping sense of movement. It is to be expected from what has already been said of the persistence of Stone Age traditions in South Africa, that scenes that may in truth date from late glacial times merge almost imperceptibly into pictures of Bushmen fighting Kaffirs and of Boers arriving with their wagons.

Hitherto we have been content to call all the Franco-Cantabrian art 'Upper Palaeolithic'. How far is it possible to attribute it to the successive cultures that we have seen to follow one another in this part of Europe? Not very accurately. Although the home art is always found in its proper cultural context, it is only exceptionally that it is possible to connect the cave art with the tools and other datable possessions of its creators. At the cave of Pair-non-Pair in the Dordogne a succession of levels containing the usual domestic rubbish of Gravettian and Aurignacian occupiers had accumulated against

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a wall covered with engravings, completely masking them. The levels suggested the engravings had been made by the first of the Upper Palaeolithic inhabitants, or at latest by the Aurignacians. Again at La Mouthe in the same region as the cave where the decorated lamp was recovered, occupation litter left by Magdalenians had blocked the entrance to galleries containing a few works of art. At Cap Blanc the frieze of horses was buried by Magdalenian deposits. From the study of sites such as these, of others where one style of painting or engraving has been executed on top of one or more earlier ones, by comparisons with the home art, it has been possible to build up an approximate sequence of styles and to relate them with more or less confidence to successive cultures. From this it appears that every west European culture from the Aurignacian to the final flowering of the Magdalenian included cave and home art. The germ of Upper Palaeolithic art evidently may have lain in the original Châtelperronian culture,[6] and from this developed among the peoples believed to be directly descended from the Châtelperronians—the Gravettians and Magdalenians. On the other hand the Aurignacian which, like the Solutrean, represents an intrusive culture although one seemingly less alien, is the first in which there is certain evidence for works of creative art. The Solutrean has been credited with possessing art forms, particularly sculpture such as that at Le Roc. Undoubtedly the Solutrean inhabitants of the cave of Parpallo on the south-east coast of Spain practised both painting and engraving, mainly on small slabs found incorporated in the rubbish of the cave floor. The historical picture seems to be, then, that once cave art had taken its place as part of the traditions of the hunting peoples of western Europe, it was adopted by all comers. Perhaps artists' clans became strong enough to secure the continuity of their tradition. That a tradition could continue with only slight changes of essential style over a period of between twenty and thirty thousand years, which is what our present chronology suggests, seems today almost incredible. Yet when we think of the immense slowness of cultural development in the preceding hundreds of thousands of years, it is apparent that in these beginnings of human history the passage of time must be measured by their own standards. There is the continuity of rock painting in South Africa to convince us that primitive artists can continue to paint in much the same way while millennia go by.

For the developments and changes of style that did mark the course of Palaeolithic art, knowledge is still very incomplete. One high authority has tried to recognize two complete cycles of development, the first taking place during the earlier part of the Upper Palaeolithic period and dominated by the Aurignacians, the second belonging to Magdalenian times. However, these cycles were difficult to define and distinguish, as was proved when the marvellous painted cave of Lascaux was discovered in 1940, and its styles could not be satisfactorily assigned to one cycle rather than the other. For the present a simpler scheme must be preferred. An early phase, which began with the Aurignacian culture, can be distinguished by simple out-

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line paintings and engravings, the animals usually shown in dead profile with only two legs indicated; they tend to be lacking in movement, and the eye is often not shown. That the artists were pioneers, still groping towards the solution of elementary problems, appears most of all in the drawing of the horns and antlers, which are always shown as though they were seen almost full face even though the body of the beast is in profile. In spite of these weaknesses, even in this opening phase of their art the Palaeolithic painters and engravers already manifest their gift for expressing the essential character and feeling of each species. Most of the representations of hands, positive (made by impressing a paint-covered hand) and negative (made by the 'stencilling' process) seem to date from this opening stage; so do meandering lines traced with a stick or finger-tips on clay, and known to science as 'macaroni'. It is followed by a second phase, evidently roughly corresponding in time with the Aurignacian and Gravettian cultures, in which much greater mastery has been attained; animals are now shown with four legs and with antlers and horns, all in perspective. The artists are already displaying considerable skill in breaking the outlines and varying the breadth of stroke in such a way as to suggest roundness and solidity. The eye is shown, generally as an oval, and other interior details are indicated. Those authorities who believe the Lascaux paintings to be mainly pre-Magdalenian must include also in this second phase monochrome paintings in which the whole body is filled in with a flat wash, and even paintings in two colours in which the modelling of the animal is suggested with remarkable success.

To the third phase belong the 'stump' and pointillist styles as well as a continuation of flat washes, and of partial washes used to suggest modelling. In Cantabria during this period a school of engravers, using very fine lines, learned to indicate the third dimension by an extensive use of shading. The combination of engraving with painting was also much favoured. This phase was certainly developed during earlier Magdalenian times, while the fourth and last corresponds with the later Magdalenian when the high hunting culture of the Upper Palaeolithic flourished exceedingly before its death. This was the period when the artists had achieved wonderful skill in polychrome painting, using the range of yellows, reds, browns and black to give a fully rounded, three-dimensional effect. The bodies of the animals were beautifully modulated with every bone and swelling muscle, every fold and hollow given its full value. Nor was the use of colour for its own sake neglected; often the artist might add touches of glowing colour with no representational purpose yet adding life and intensity to his work. This great style reached its climax in the finest of the polychrome bison at Altamira. Before the final disappearance of Palaeolithic art there was some tendency towards a kind of impressionism. For instance a herd of reindeer was suggested by engraving only the first and last animals with a sea of antlers between them, while mammoths were rendered without legs, the feet alone being sketched in. There was an increase in the use of geometrical patterns,

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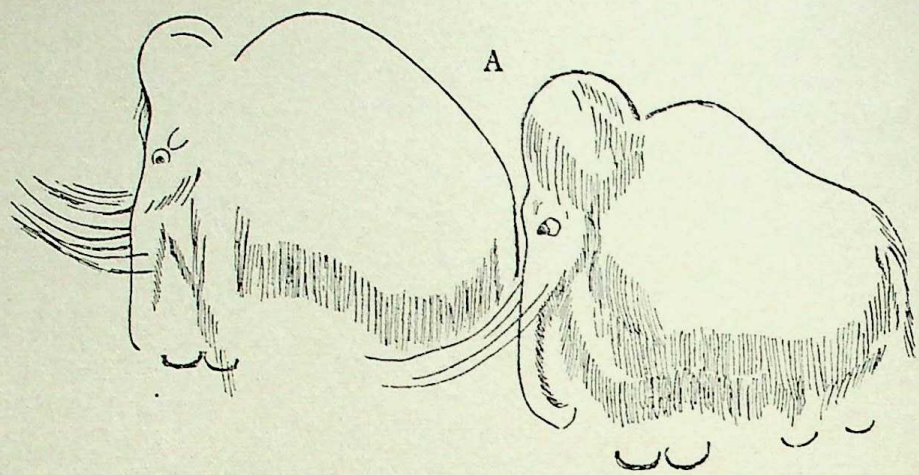

FIG. 32. Upper Palaeolithic engravings from the Dordogne. A: two mammoths, Font-de-Gaume, on cave wall (after Burkitt); B: head of reindeer, La Madeleine, on bone (after Capitan and Peyrony); C: horse, Abri Labatut, on stone (after Graziozi).

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some of them derived from representational forms. They included zigzags, triangles, hatched ribbon and lozenge patterns among rectilinear patterns, semicircles, rings and spirals among curvilinear.

## THE MOTIVES AND INSPIRATION OF THE ART

It has been said that Palaeolithic art can claim to be the most improbable event in history, and fundamentally it is as impossible to explain why it occurred as any of the other sudden upsurges of creative genius in the arts that, happily for us, have marked the course of our human existence. The tides of the human psyche ebbing and flowing in society remain largely mysterious. Yet at a rather more superficial level there are explanations and interpretations to be made. On the one hand there are the permissive factors. While material prosperity can never be the cause of artistic genius, a society cannot support its artists without an economic margin. Thus there is no doubt that the abundance of game to be hunted in south-west Europe in late Pleistocene times made a necessary foundation for the development of Palaeolithic art. Although the artists were probably themselves hunters, it seems very likely, particularly as skill and professionalism grew, that in exchange for their artistic services to the community they only had to hunt part-time and were supplied with food while at work in the caves. On the other hand there are the uses of art—meaning its uses to society and not the satisfaction it gives to its creators. A healthy artistic tradition is seldom without some more or less practical function, and in primitive societies where there is no recognized division between intellectual, practical and religious activities, art must always be an integral part of everyday life.

There is long-standing dispute between those who have wished to see cave-painting and its related forms as an activity undertaken for its own sake, for self-expression and the creation of beauty, and those who see it as a purely practical activity undertaken to secure good hunting. This conflict is entirely in the minds of the disputants. Even in the twentieth century, when life is lived so much in watertight compartments, no one ever thinks of asking whether the painters of easel pictures work for self-expression or because they intend to sell their canvases. To try to separate art and magic and religion in the unified life of early man shows the folly of the over-analytical mind.

There is no doubt at all that cave art had its magico-religious function. In particular it served that form of it known as sympathetic magic, which depends upon a belief that similarity or relationship is identity, and that anything down to an image or related part of a thing will affect the thing itself. It is an idea which has constantly recurred even in civilized life. Potatoes when first introduced into Europe were thought to cause leprosy because the appearance of some of the tubers suggested the disease. It is well known that in modern Europe and America people still make images of

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their enemies and stick them with pins to secure their death, and this practice makes an exact analogy to one aspect of the Palaeolithic hunters' magic. A considerable number of paintings have spears or darts drawn or scratched on the animals' flanks. There are many instances at Lascaux. At Niaux there is a famous example in which three little pits, naturally formed, have been enclosed by the outline of a bison, and each furnished with a dart to give the semblance of wounds. Clearer still was the evidence at Montespan, where the body of a bear, roughly modelled in clay, was found with a bear's skull lying in front of it suggesting that this dummy had once been draped in a pelt with the real head attached at the neck. The clay of the body was pierced with spear thrusts.

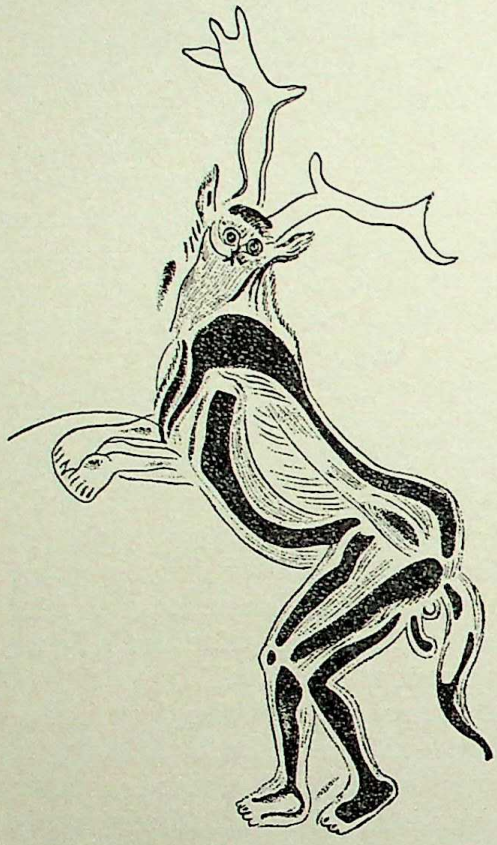

FIG. 33. The 'Sorcerer', cave of Les Trois Frères, Ariège (after a drawing in the collection of the Musée de l'Homme, Paris).

If one form of sympathetic magic was used to ensure successful kills, another was to cause an increase of life. Some of the painted beasts are undoubtedly intended to be gravid, while the careful representation of bull and cow bison at the Tuc d'Audoubert, and the signs of rites having been celebrated in the cave, is very suggestive of fertility magic. That this conception went far beyond sympathetic magic to form the basis of a fertility religion with a great history before it in Eurasia is shown unequivocally by the Venuses and other crystallizations of the Mother Goddess concept (p. 199). The scene at the east Spanish cave of Cogul with the group of women surrounding a man may perhaps represent celebrants in such a fertility cult of which there will be more to say presently (Fig. 28).

A third type of evidence for the close association of cave art with magico-religious activities is that provided by the various drawings of men with animal disguises and possibly of beings that are part man, part beast, part divinity like the great 'Sorcerer' of Les Trois Frères himself (Fig. 33). Indeed this cave as a whole proclaims its ritual use as obviously as any chapel. Passages deep in the rock lead into a small chamber with walls thickly netted with engravings of many kinds of animals, including the strange group of a man with bison

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head and other animal attributes dancing behind two weird hybrid beasts, apparently in a state of sexual excitement. From this chamber a tunnel with further engravings curves upwards to give access to a window opening into a chamber some twelve feet above the floor, a place where an officiating medicine man could appear with dramatic effect and dominate participants gathered below him. It is extraordinarily stirring then, to find that the antlered, phallic, hypnotically staring figure of the 'Sorcerer' has been painted and engraved on the rock face just beside this opening.

This magical element in cave art must have had less force in the home art. It is quite likely that when deer, mammoth and ibex were carved on spear-throwers, it was believed that these images might help to make them effective against the animals represented. On the other hand no one can doubt that the carving was done partly for the pleasure of doing and regarding it, for it is pre-eminently decorative. Still more is this true of such little carved objects as the fish palette from the Grotte de Rey and the bone silhouettes of animals and even the superb horse head from Mas d'Azil and the horse from Espelugues, Lourdes. What conceivable purpose other than decoration can the artist at La Mouthe have had when he engraved an ibex on his lamp?[7]

There is no doubt that cave art, and to a lesser extent the home art as well, served the animal cult, part magical and part truly religious, that underlay the lives of these hunting peoples. The status of the individual and the life of the tribe were wholly dependent on the multiplication of the game herds and success in hunting them, and art responded to the urgency of these two great needs. Utilitarian in themselves, they cannot be separated from a religious impulse towards a form of communion with animals and nature, a *participation mystique*.

And in this religious aspect we rediscover Palaeolithic art as genuine imaginative expression, its creators as true artists. Just as mediaeval painters could work entirely in the service of the Christian Church, just as modern painters work to sell their canvases to furnish houses and galleries, so too (and indeed much more consistently) could the painters of the last glaciation work in the service of hunting and fertility magic and still remain artists. From that time to this there have been great numbers of primitive peoples living throughout the world, yet none has had a representational art to approach theirs. Peoples who, like some of the Australians, make strikingly effective pictures in connection with hunting magic lack their realism and technical skill. More often no attempt at realistic representation is made, and symbolic designs or enactments supply the identification needed for sympathetic magic. A visual identity between the image and the object has never been considered necessary. Yet in the whole range of Palaeolithic material only one example is known with anything of the inartistic and grisly character often found among the properties of the primitive magic worker—

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that is the dummy bear with the real head that had been set up in the sanctum at Montespan.

All the rest may have been intended for magical usages, but was at the same time a true art, and an art in what we have come to call the humane tradition. In fact it comes closer to Chinese drawing and painting than to any other, and the Chinese were inspired by a mystical conception of the relationship between man and nature. The art itself makes it abundantly clear that the Stone Age artists knew an intense self-identification with the animals they portrayed. Perhaps with a strengthening self-consciousness due in part to the development of fully expressive language, a factor which would also have heightened their image-making powers, these people felt a need to re-affirm their participation in nature. A modern poet has said that 'the poetic image shows the artist seeking to express unity with all that is and has been', and this was true of the first artists as of the latest. Various attempts have been made to suggest that the cave-painters used dead beasts as their models, or that the sight of shadows suggested the idea of painting shapes on the cave wall. Such ideas are entirely misleading. Anyone with any understanding of the creative process must know that the artists working in these fastnesses so remote from the outer world carried with them intense and emotionally charged images of the animals on which their lives were centred. The creative act, as in all true art, had already taken place in the imagination; the pigments, the gravers, served only to give it material expression. With all utilitarian magical functions apart, this element of communion with their animal subjects made the activity of these artists at one with the religious life of their societies.

## MAGIC AND RELIGION IN THE PALAEOLITHIC AGE

Many aspects of the religious life of Palaeolithic times have already been touched on in considering mental development, social organization, hunting and domestic customs and artistic expression. This is inevitable, correctly emphasizing the unity of primitive life, the fact that magic and religion served practical ends and that practical life was always suffused with magical and religious meaning. It remains only to give rather closer attention to those matters that we are inclined to isolate as religious—ideas about the soul, spirits, divinities and conceptions of a supernatural realm of existence.

As man's consciousness drew him apart from the great concourse of unselfconscious nature from which he was emerging, he was bound to turn to look at nature, and having contemplated it to seek to explain what he saw, to affect it for his own ends, and finally to regard it with awe and reverence and a desire for reunion. In these three urges, one intellectual, one practical, one mystical, lay respectively the germs of myth, magic and religion. But in contemplating the universe about him man saw it through the instrument of his mind, which was anything but a clear mirror of nature.

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It projected emotions, dream and memory images, and above all intuitions of its own unconscious depths, on to the outside world.[8]

Thus human consciousness has always found much of itself in the universe. At its simplest, when hardly emerged from its thoughtless past, it saw all nature as full of a similar consciousness, endowing things, physical phenomena and animals equally with life, feelings and purposes. Winds, storms, stones, trees, animals—all, like man himself, were imbued with spirit. This state of mental relationship with the world has sometimes been known as animism; the further state (and they cannot, of course, be sharply distinguished) when the spirits began to take shape as individualized divinities has similarly been called the daimonic view of the universe. With further strengthening of conscious powers divinities tended to take larger, more abstract forms. It seems that while the individual mind was still closely bound up with family, society and nature, and when, moreover, women and maternity were probably still dominant in family and social structure, there was a tendency for the idea of the divine life and fertility to be expressed in the form of a Great Goddess.[9] As intellect gained in power, greatly increasing man's isolation, and as laws and prohibitions built up the conscience (call it the super-ego, if this language is preferred), then the masculine god waxed and assumed the throne in the human mind.

Holding the spirit-filled conception of the universe, and subject to all the good and evil chances of human life on earth, early man was certain to form the notion of luck and to try to make the spirits favour him by means of magical compulsions of the kind already described in considering Palaeolithic art. Probably, too (though we have no material evidence for it), man indulged the dark side of his nature by using black magic to force the spirits to do harm to his enemies, public and private. Not only was man's dawning consciousness made aware of the outrageous vagaries of 'luck' but also of death—something more than the worst dart of ill luck. Death with its emotional shock and power to stir the unconscious has always been one of the great forces behind the religious impulse and magical activities. The idea that a man's spirit should continue to live, perhaps be reborn into another body, which was to have so long and vast a history before it, appears to have been one of the first to emerge among our Palaeolithic ancestors.

Although the spirit ancestors might have to be managed by magical devices, death was certainly more bound up with the religious impulse than with magic. It is clear that Palaeolithic man already felt the true religious impulse towards reverence and desire for reunion with the divine. It poured itself very largely into cults of the animals on which all human life depended, but it also went so far as to attain the idea of the Great Goddess. An interesting sidelight on the growth of animal cults of a more or less totemic kind is provided by the experience of two German refugees who decided to live alone in the African veldt as hunters. They discovered that after a year or so of this hunting existence, they not only dreamed nightly of animals, but also

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of themselves turning into animals. Primitive man does not disassociate the dreaming from the waking world, and it is easy to see how dream experiences could enhance the natural, emotional and reverential attitude towards the animal life-givers and help to shape totemic beliefs.

Meanwhile a more or less rational curiosity, a wish to explain the world of which he was growing more and more objectively conscious, led man to weave all that he saw of nature, society and culture into myths in which spirits and divinities of every magnitude naturally played a dominant part. So stories were made and repeated, but always in evolving forms, to explain the creation of the world, language, crafts and above all the life and death of man.

The first indication we have of our remote predecessors being troubled with metaphysical intuitions (however little brought into consciousness) is in the careful disposal of the dead by Neanderthal man. Probably the earliest examples of such burial are those at the Wadi el Mughara in Palestine (p. 82). Here the bodies of the Neanderthaloid inhabitants had been laid in trenches cut in the cave floor and joints of food and flint weapons put beside them. Mention has already been made of the burial of a Neanderthal child at Tshik-Tash in central Asia that seems to have been made in a shallow slab-lined grave, surrounded by horns of the mountain goat, their points stuck into the ground. More remarkable still were the interments at the rock-shelter of La Ferrassie in the Dordogne. Here two adults had been buried against the back wall of the cave, one in a natural recess, one in what seems to have been an artificially deepened cavity, and their bodies protected by a covering of stones; near them a child's skeleton had been placed in a small trench, the skull being laid on one side, the limb bones towards the other. The trench was roofed by a slab of stone with circular depressions, or cup-marks, hollowed out on the under-side. In a ditch near the child's grave were animal bones and cinders, suggestive of cooked offerings or the remains of a funeral feast. The well-known burial of an oldish Neanderthal man at La Chapelle-aux-Saints in the Corrèze had been made with equal ceremony. The body had been placed in a carefully dug trench in a little sepulchral cave, and round it were ranged a number of the finest Mousterian points and scrapers. A pit, with animal bones and a bison horn, comparable to the ditch at La Ferrassie, had been dug at the entrance. Usually the Neanderthalers were buried in the attitude of sleep, gently flexed and lying on one side; several were accompanied by red ochre, generally supposed to represent the life-giving properties of blood.

These interments, some of them elaborate enough to deserve their description as ceremonial burials, certainly indicate some form of a belief in a continued existence after death. Food, implements and red ochre are all proof of it. It suggests that already these people had an idea of physical continuity, with the dead ancestors still in being among their living descendants.

Other evidence for ritual practices among the Neanderthalers is slight.

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The discovery at Monte Circeo in Italy of a Neanderthal skull, its base broken out to remove the brain and set in a hole within an oval of small stones, may mean that the cannibalism of this people, though it seems often to have been merely gastronomic, sometimes assumed a ritual form.

Though sometimes more elaborately furnished, the burials of the Upper Palaeolithic and Mesolithic peoples did not greatly differ from those of the Neanderthalers. There was, however, a greater variety in the positions in which the bodies were placed: occasionally they repeated the sleeping posture of their predecessors, sometimes were extended at full length on their backs, sometimes on their sides with the knees up to the chin (presumably generally having been bound in this posture) a style to become very usual in Europe and north Africa in the succeeding Neolithic Age and widely prevalent among the modern primitive peoples of Africa, Australia and America. With the supposed negroid skeletons in the cave known as the Grotte des Enfants at Grimaldi, the body of an old woman had been laid beside a youth's, both in a crouched position; in the neighbouring cave of Barma Grande a man, youth and woman had all been laid extended in a single grave. The practice of interment after the flesh had decayed, another custom frequent among primitives and usually linked with the idea of a final setting free of the spirit to join its fellows, seems not to have been observed before Mesolithic times. The habit of burying the dead in the cave-dwelling, and, so far as we can tell, continuing to live in it, suggests they were not feared—and indeed could safely be furnished with unbroken weapons (Fig. 34).

Frequently the body, and particularly the head, was protected by stone slabs forming a rudimentary tomb, and accompanied by grave furniture and food. We know that men, women and children were often buried wearing pendants and necklaces, hairpins and other ornamental objects, and this suggests that they were laid in their graves fully clothed. Some of the skeletons in the south of France (notably at the Grimaldi caves of Cavillon, Barma Grande and the Grotte des Enfants) were unusually richly decked with ornaments and were overlaid with shells looking as though they had been attached to skirts and head-dresses. This tradition is exactly continued in the rich accoutrements of the Natufian burials on Mount Carmel (p. 100). In east Asia the same ideas were introduced by the Upper Palaeolithic immigrants; at Mal'ta a three-year-old child had been interred under the foundations of a hut wearing a necklace, pendant and chaplet and accompanied by miniature tools.

It has already been said that ochre had frequently been either sprinkled over the corpse or painted on it (as among the Bushmen); a similar symbol for the life force may have been intended in the tusks and horns sometimes laid with the dead. The youth in the Pavilland cave, south Wales, had been steeped in ochre and furnished with the entire head of a mammoth; a mammoth tusk accompanied a burial at Brunn in Moravia. If symbolism was in fact intended in this funerary use of horns, it should be related to the

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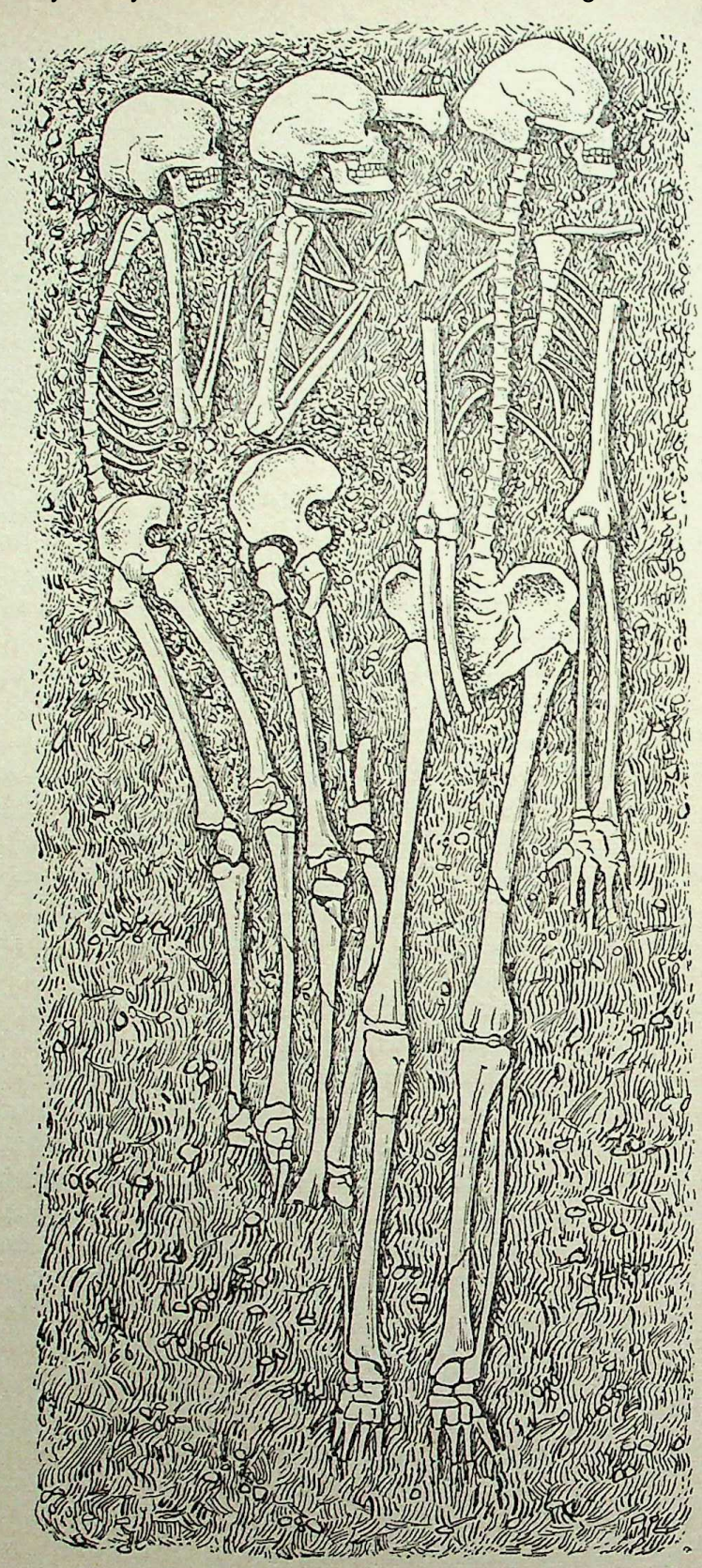

FIG. 34. Upper Palaeolithic triple burial, Barma Grande, Mentone (after Verneau).

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three carved reliefs of women holding bison horns from Laussel; in religious cults of later times the creative force of the beast was considered to be expelled through the horn point.

It would be wrong to leave the question of burial practices and their religious implications without again mentioning the nests of skulls of Mesolithic age at Ofnet in Bavaria. It is possible to regard these skulls as belonging to revered persons and even as evidence for some cult of the dead or of ancestors. The evidence has already been given, however, for preferring to interpret these skulls as the relics of head-hunting.

If their funerary rites reveal the Palaeolithic and Mesolithic hunters as believing in the continued existence of individuals after death and a strong sense of group solidarity between these dead and the living, the animal art and other evidence suggest that this belief was probably related to animal cults akin to modern totemism. All the indications of totemic ideas among these ancient hunting peoples have already been stated in connection with their possible social implications (p. 122). Though it is still slight, there is more to suggest something akin to the religious aspect of totemism existing among the Upper Palaeolithic hunting peoples than there is, or can ever be, for the social. It is unlikely that either ritual or belief had become so formal or so elaborate as in later times, but there seems every reason to suppose that the dawning religious impulse of the human psyche went out towards animals and animal life with a sense of wonder and a desire for communion with them. The emotional content of the animal paintings themselves, the evidence from the art that men dressed themselves in animal guise and were capable of imagining a being like the Trois Frères 'Sorcerer', all strongly support such an interpretation. The scene of human figures ranged round a dismembered bison from Raymonden may well represent a ritual meal of the kind partaken of by some totemic clans; the comparable one from La Madeleine of a procession with bowed heads approaching a gigantic bison figure might be a rendering of some form of the propitiation ceremony, of seeking forgiveness from the animals to be killed, so often performed by hunting peoples in Australia, Africa and America (Fig. 35).

Other more particular analogies can be found, though identity can never be proved. Central Australian tribes keep their sacred *churingas*, pieces of wood or stone carved or painted with symbolic designs, in appointed caves. They are 'spirit houses' signifying the conjunction of the divine, animal and human aspect of the totem. They are also the houses where spirits await reincarnation in the human mother's womb as part of the perpetual renewal of the totem, and in this sense are shown to initiates undergoing the rites that give them rebirth into full membership of the clan. Objects strikingly like the *churingas* were in the possession of the Magdalenians, while the stones engraved with symbols from La Ferrassie might have played a similar part among the Aurignacians. Even more suggestive are the painted pebbles of the Azilians. It is also worth commenting that the Australians, on entering the

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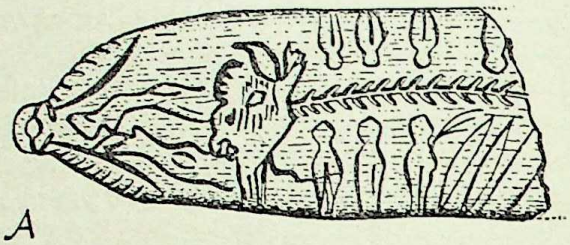
caves to fetch the *churingas*, impress the palms of their hands near the entry to establish their right of passage, a practice that might conceivably be reflected in the hand-impressions and stencils found at Gargas and Castillo.

While the central Australian tribes keep movable sacred symbols in caves, the Karadjeri people of the west make sacred cave-paintings. These followers of the Rainbow Serpent believe that by making or retouching paintings at sacred localities within the caves they can promote the fertility of the totemic species. Their practice of retouching old paintings is of particular interest



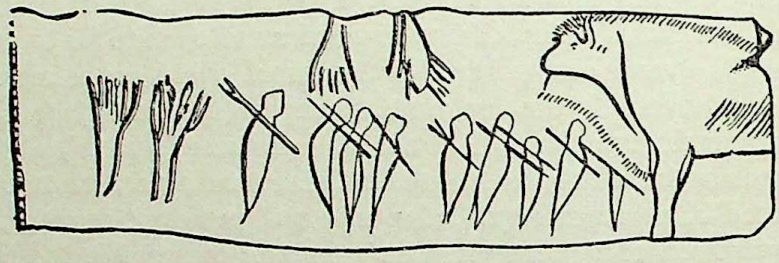




FIG. 35. Upper Palaeolithic rituals. Engravings from the Dordogne. A: Raymonden; B: La Madeleine (after G. R. Levy).

when it is remembered how many of the Palaeolithic works have been repeatedly redrawn. Like the *churingas*, the Karadjeri paintings are held to unite the individual with the totem and the divine ancestor, and the continued use of old ones serves to maintain continuity with this ancestral past.

One other possible analogy can be detected between the rites and beliefs of modern primitive peoples and those of the Palaeolithic hunters. A conception of spirit ancestors coming to the world through lakes, caves or other openings in the ground and making intricate journeys that have to be re-enacted by their descendants is so widespread that it might claim to be a part of that inherited mental furniture already discussed. Comparable ideas are found, too, in the myths and rituals of civilized peoples. The Australians

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make the most exact and complex maps of these journeys in the form of ground-paintings, and themselves go in procession from sacred spot to spot, following the divine route; American Indians have comparable rituals. The 'macaroni' of the early cave-paintings and other abstract designs such as the strange curvilinear patterns sometimes carved by the Magdalenians have been likened to these maps of spirit journeys. It has also been suggested, perhaps with more justification, that the long, tortuous routes which had to be followed to reach many of the painted caves were deliberately undertaken as a form of re-enactment.

It seems that totemism has special need of art forms in order to make the image of the undying and divine totemic life—something more real than any of its individual expressions in man and beast. While the Australians imparted a certain power to their stylized and even schematic paintings, the Palaeolithic peoples of Europe had extraordinary artistic gifts and so were able to give their images more than the natural force, vigour and significance of the living animal. It is easy to see how the urge for finer and more perfect imaginative expression in the artists coincided with this wish for religious imagery in the whole community and led at last to the highest achievement. Here was a unity of purpose and inspiration greatly to be envied by our outcast artists of the twentieth century.

The shrine established by the Natufian hunters by the spring at Jericho suggests that already by Mesolithic times men were honouring the 'lifegiving powers' of the waters—or, in other words, the 'spirit of the spring'. Local cults of spirits of such natural features were probably universal in prehistoric times, persisting behind all other religious forms.

There remain the female statuettes or Venuses whose significance must be more purely magical and religious than any other element in Palaeolithic art. It can be said that sex provided the only emotion in the life of early man that could rival that roused by the game animals. That is true, and the emotion so engendered must help to explain the artist's inspiration. The life-size female figures on the cave wall at Angles-sur-l'Anglin with their open vulva may even have been used for sexual rites; carved phalluses are not uncommon in the caves. Yet most of the Venuses are not essentially sexual, but rather expressive of the great basic idea of procreation, fertility, the continuance of life. They are extraordinarily like the Mother or Earth Goddesses of the agricultural peoples of Eurasia in the Neolithic Age and must be directly ancestral to them (Pl. 7). Indeed, it may be that just as this goddess presided over the megalithic and other tombs of the later age, and the crouched bodies within can be seen as awaiting rebirth from her womb, so the bodies buried in the caves awaited renewal through the power symbolized by the Venuses.

The concept of the Mother Goddess may be said to be almost as universal as the religious impulse itself. Whether she is an inherited figure of the human psyche, or one created by the common experience of life itself, we cannot

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presume to judge, but she seems to have eternal life. Her power waxes and wanes, sometimes she is almost dispossessed by her son or by the divine father, but she lives on in the mind of man whether he calls her Nentinugga, Ishtar, Hathor, Isis, Hera or Mary. Certainly the concept of the goddess has grown more subtle and refined intellectually with the development of consciousness, and yet from the earliest time the intuitions of the artist have been subtle and fine. The Venus of Lespuges, carved perhaps twenty-five thousand years ago, is not only lovely and harmonious of form, massive and yet full of grace, but also perfectly expresses, in her bowed head and the superb resignation of her poise, the feminine principle, with its recognition of the glory of life and the need for its continuance. The Venus of Lespuges may have had no annunciation of a coming god, but she knows that she is to bear man and his spirit through all eternity.

## NOTES TO CHAPTER VII

1. For Professor Debetz, the aesthetic reflection of reality and creative art are not primordial. They took shape at a rather high stage of development of human society and consciousness. One of the necessary factors of creative art is the technical aspect, physical labour associated with certain work habits. But these habits have not come into being suddenly, by themselves. A determining factor for the origin of art was that in the process of social labour man, in the course of time, not only became more deeply cognizant of the world around him, practically mastering shape, colour and other properties of objects, but also learned when making tools to produce the forms that he required according to a pattern or plan previously conceived. Labour is older than art and is the basis of its origin.

2. Dr P. Bosch-Gimpera feels that the striking affinities between Aurignacian art and the much more recent 'Arctic' rock engravings and paintings, which were recognized by A. W. Brøgger as early as 1906, are definitely not traceable back to direct links between the Upper Palaeolithic of western Europe and the Mesolithic/Neolithic of Scandinavia. The relationship must, however, be of an indirect character. We have to bear in mind the following: (1) that at least the Middle and Late Aurignacian of the west have close relations with the east; the same applies also in the case of Aurignacian art; (2) that in the east the Aurignacian (or Gravettian) did not give rise to Magdalenian, as in the west, but instead there was a retardation leading to the Mesolithic; this eastern Upper Palaeolithic, too, yields works of art—especially *art mobilier* (home art), but also individual instances of rock pictures (Melitopol area, Sea of Azov); and (3) that in northern Norway 'Arctic' art is primarily the product of the Komsa culture, which is thought to have originated in the east. This raises the possibility that the origins of 'Arctic' art reach back to the Upper Palaeolithic in Russia, and are thus indirectly related to Aurignacian-Gravettian art in western Europe. See J. Maringer and H. G. Bandi, *Art in the Ice Age* (London and Basle, 1953), pp. 161–3.

3. Today the prevalent view is that Spanish Levant art dates from a relatively late period. It is possible, although there is no proof of this, that its origins go back to the Upper Palaeolithic. But in the main it must be 'Mesolithic', even if there may be a certain chronological overlap with Neolithic cultures. See J. Maringer and H. G. Bandi, *Art in the Ice Age* (London and Basle, 1953), pp. 132–42.

4. Professor A. Varagnac points out that in Franco-Cantabrian minor arts, too, there are several examples of composite scenes. Among those that are of considerable interest is an engraving on schist from the cave of Péchialet (Dordogne), in which a bear attacking (?)

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a man, and behind it another human figure, can be identified. See H. Breuil, 'Œuvres d'art paléolithiques inédites du Périgord et art oriental d'Espagne', *Revue anthropologique* (1927), pp. 101–8.

5. See p. 130, note 6.

6. Most authors consider that the Upper Palaeolithic art of western Europe begins only with the typical Aurignacian (= Middle Aurignacian). See H. Breuil and R. Lantier, *Les Hommes de la Pierre Ancienne* (Paris, 1959), pp. 180–1. But it is still an open question whether the representations of hands (in Gargas, for example) could have been painted already during the Châtelperronian (= early Aurignacian). See L. Kirchner, *Jungpalaeolithische Handdarstellungen der franko-kantabrischen Felsbilderzone* (Göppingen, 1959).

7. For Professor A. Varagnac it is nevertheless conceivable that this representation of an ibex on the lower side of the lamp, which would not normally be visible, had some magic significance. This view is indirectly corroborated by the fact that even today special powers are ascribed to the 'buck' in folk-lore.

8. Professor W. Koppers remarks that the hypothesis that religious ideas developed from the impersonal to the personal is regarded by some scholars as a purely subjective (evolutionist) view. The fact that elder groups of people, known to ethnological research, are constantly attempting a new interpretation of personality seems to prove the contrary. Impersonal (pantheistic) ideas in general unequivocally represent a younger development.

9. Professor W. Koppers asserts that in the light of present knowledge many historians of religion reject the idea that the belief in a Great Mother Goddess is of relatively great antiquity. They hold this view to be as outmoded as Bachofen's theory that matriarchy preceded patriarchy.

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# SECTION TWO

# THE NEOLITHIC

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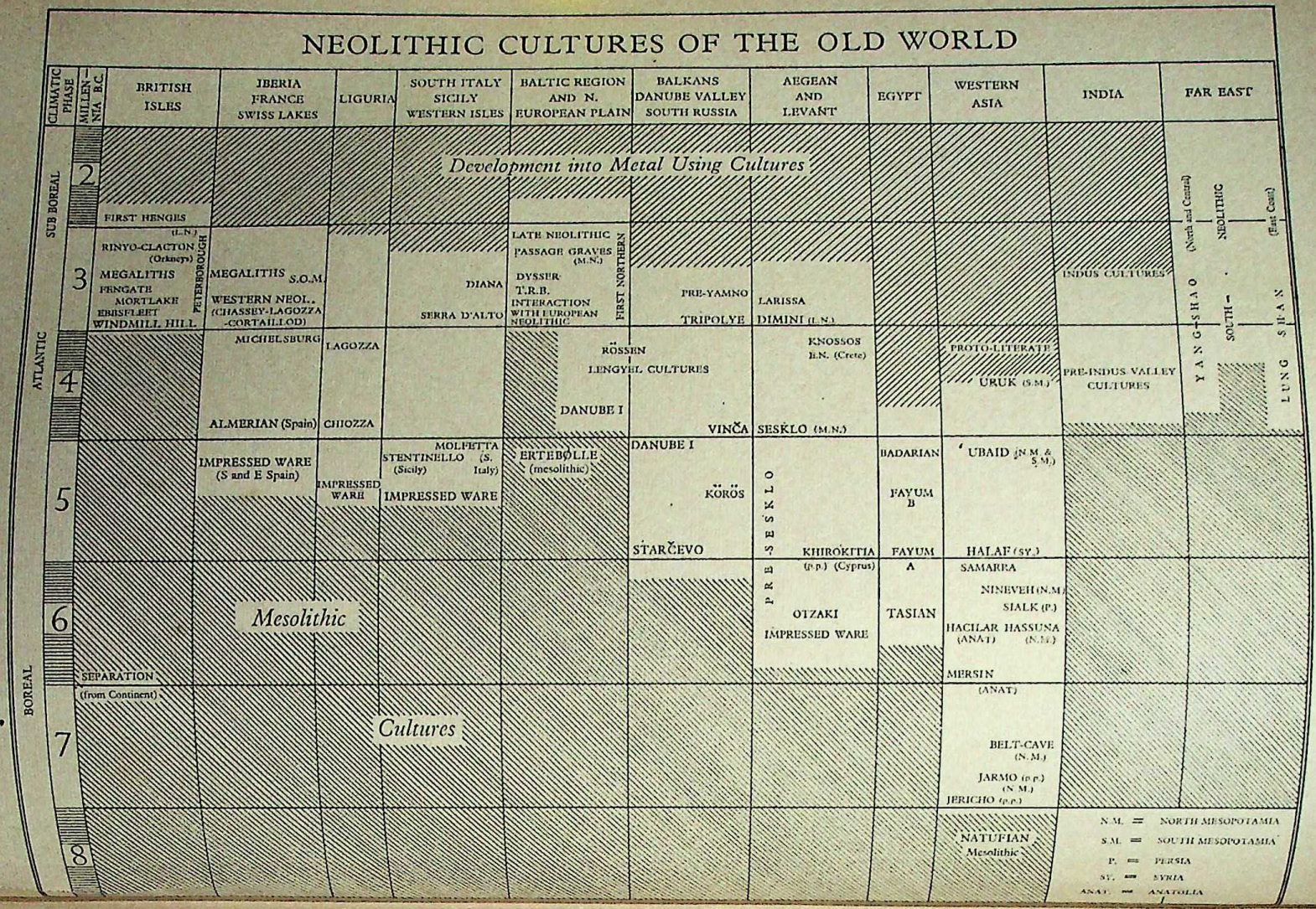


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CHAPTER VIII

# THE HISTORY OF THE NEOLITHIC CULTURES

For something like a million years men had been living as hunters. For the last forty thousand of them it is true, they had so developed their powers of mind, imagination and skill that they had emerged into full human stature. Yet still, like all the other creatures that had evolved with them on the face of the earth, they were wholly dependent on what nature provided for shelter, clothing, and above all for food. Such supplies were often precarious, almost never constant, and kept men ever on the move. Possessions were a handicap, even children had often to be limited in number. The most important change that ensued when man began to control his natural environment was that he was enabled to settle down. Great possessions became at least a possibility, substantial and enduring monuments were worth the building. Children could live where their parents had lived, inherit what they had made; their numbers could increase.

One distinguishing mark of the first phase of the new farming economy was the establishment of settled villages. The idea of raising a few crops by deliberate sowing, of keeping young animals taken from wild herds, may have happened at several times and places in human history. It seems almost certain, indeed, that the whole agricultural revolution was achieved independently in the New World[1] (p. 257). Profound changes had to be made to adapt it to the climate of eastern Asia. Nevertheless it does at present appear that the enterprises and discoveries that enabled farming to support the settled village community was achieved only once and within a limited region in the Old World; from there the new knowledge together with seed grain and breeding stock were carried outwards by cultural borrowing and the movement of peoples. It is the purpose of this chapter to try to describe first the emergence of the new economy and then its diffusion. A place must be found also to discuss an independent establishment of agricultural communities in America.

This spreading change of the economic foundation of existence constitutes what has been called the Neolithic revolution. It is at once apparent that it took place only over a great range of time. Beginning some eight or nine thousand years ago in its cradleland, it took between three and four thousand years to reach western Europe on the one hand, China on the other. Indeed, as is well known, Bronze Age cities were already in being before the first farmers sowed their crops and led their flocks and herds in western Europe. Yet the concept of the Neolithic Age remains useful so long as it is under-

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stood that it is not a time phase falling between exact dates, but represents the period between the end of the hunting way of life and the beginning of a full metal-using economy, when the practice of farming arose and spread through much of Europe, Asia and north Africa like a slow-moving wave.

The Neolithic economy generally depended upon mixed farming. The oldest settlement sites known to us were already dependent on both domestic animals and cultivated cereals. If before this either stock-breeding or agriculture were ever independently established as the basis of a full farming existence, we have no knowledge of it. As for nomadic pastoralism, although it is true it might easily be overlooked as it leaves scanty traces, it is a very highly specialized mode of life and may not have been perfected until relatively late. Certainly, on the vast Eurasiatic steppes where it was afterwards to flourish it does not seem to have emerged until several millennia after the earliest settlement of mixed farmers. Pastoralism will be discussed in due course, but it cannot for the present be included in any account of the origin and spread of early Neolithic culture.

The practice of farming and life in settled hamlets can be accepted as the first mark of the full Neolithic revolution. Certain particular items of material culture so often accompany it that they deserve mention in any general definition of Neolithic culture. One is the polished axe or adze, made either of igneous rock or flint (p. 317) the other the straight sickle, more or less on the Natufian model. The crafts of potting and weaving were soon to become the most important additions to Neolithic culture, but they were, as will be shown, secondary traits following upon the essential innovations in farming life and equipment.

It has already been said that the cradle of the farming economy with more or less settled villages has proved difficult to place exactly in either time or space. Perhaps it is not surprising, for the beginnings of things are of their nature elusive, being often both humble and ill-defined. Furthermore, this particular genesis is not likely to have been closely localized. Ideas such as the sowing of crops and herding of animals can easily spread; they are far more readily adopted than changes in tool-making and other traits of material culture. Providing the land and climate were suitable, peoples of quite different traditions could accept the Neolithic revolution and gradually adapt their cultures to it.

At least it can be said that there is no longer any serious doubt that the earliest centres for both agriculture and stock-raising lay in south-west Asia, well within that Eurasian theatre that has seen all man's leading initiatives since the beginning of Upper Palaeolithic times (Map VI). There have been claimants for north Africa and even for Abyssinia, but both archaeological discovery and recognition of the natural range of wild species of plants and animals ancestral to the cultivated varieties point more and more clearly towards south-west Asia. The ancestors of emmer wheat and two-row barley, apparently the cereals first to be cultivated, have a wide range from Palestine

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(a)

(b)

7

*Comparison of Palaeolithic and Neolithic 'Venuses'*

(a) *Vénus de Lespuges*

(b) *Cycladic statuettes*

[Schachermeyr

*photo J. Oster,* l'Homme]

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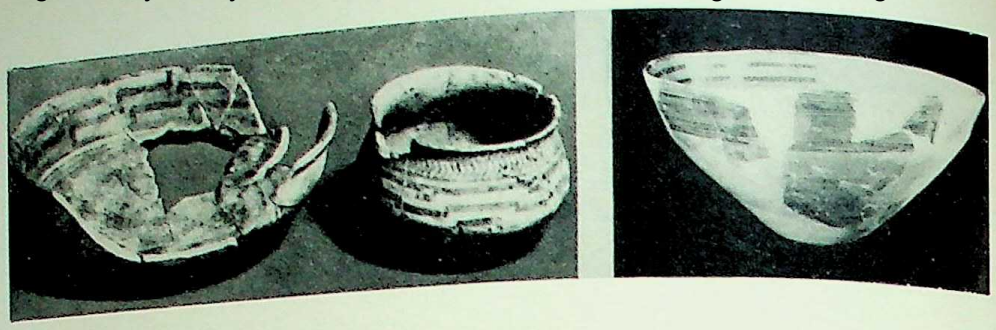


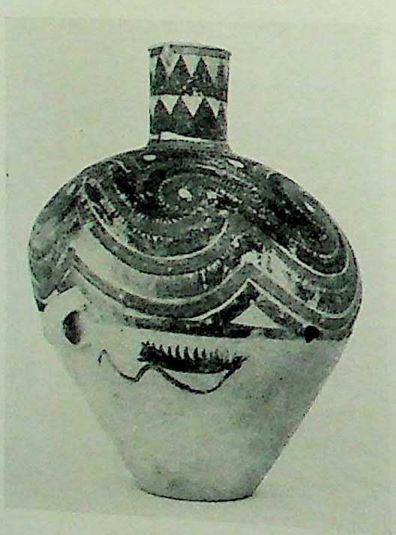
(a)

[*photo Josephine Powell*, T.H.

8 *Selection of Asiatic Painted Pottery*

(a) *Sialk pottery*

(b) *Yang-shao painted pottery from China*



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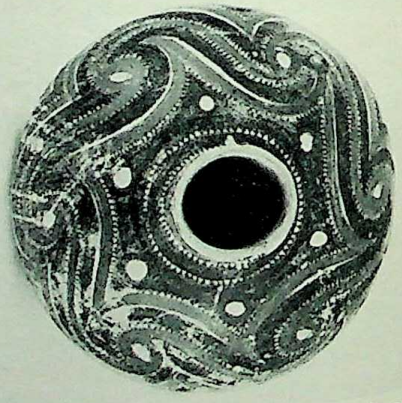

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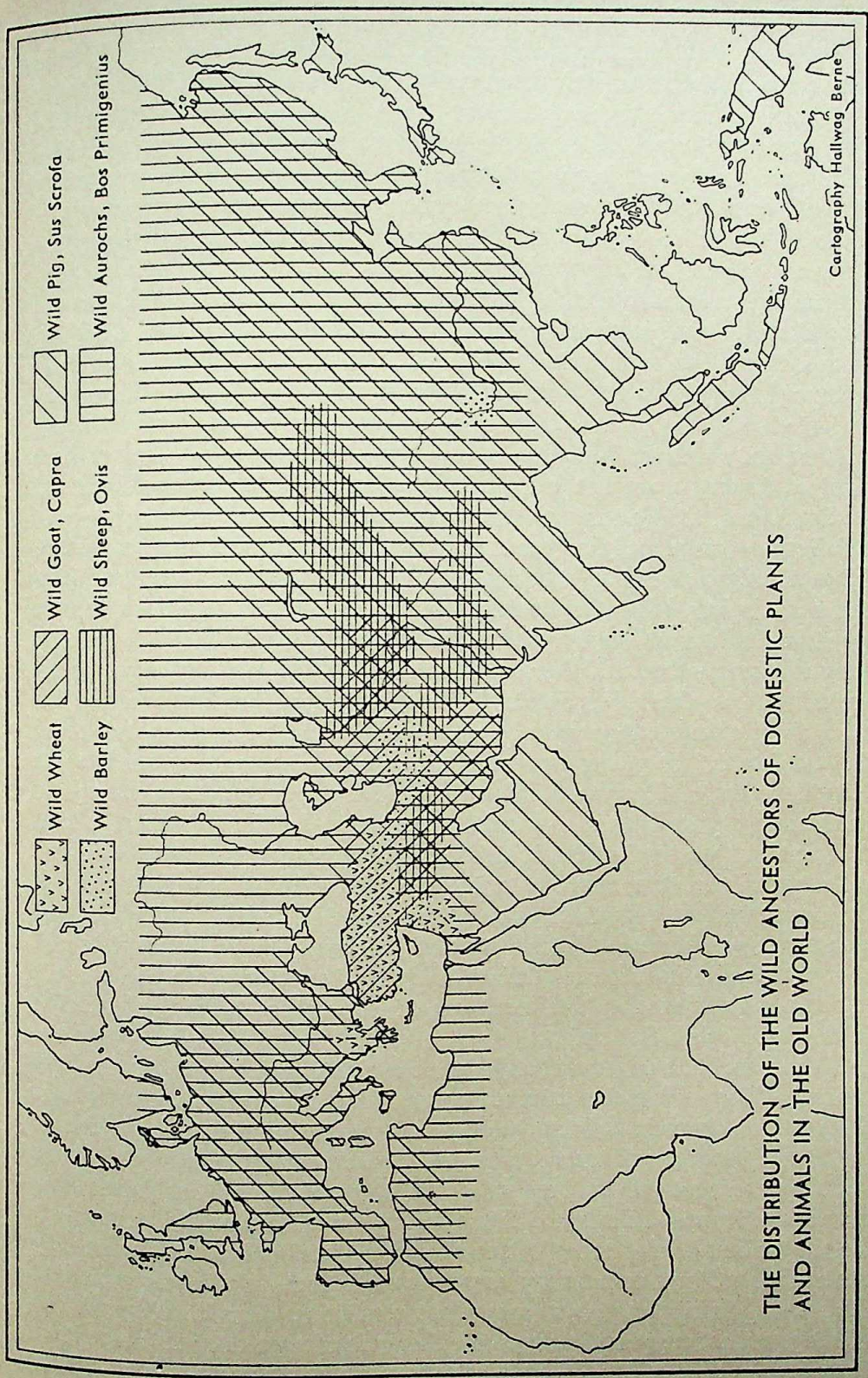


THE DISTRIBUTION OF THE WILD ANCESTORS OF DOMESTIC PLANTS AND ANIMALS IN THE OLD WORLD

MAP VI



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to Persia and Afghanistan; the Asian mouflon sheep and the urial, also an Asiatic species, seem to have been the precursors of the earliest domestic herds, while Africa has no wild sheep.

Within south-west Asia itself the search for the early centres of settled farming is narrowing. They were certainly not in the flats of the great valley of the Tigris and Euphrates where agriculture was later to come to full fruition. One school of thought holds that they should be sought in the region of the southern Caspian basin. Another, on the contrary, is convinced that the high Anatolian and farther Iranian plateaux, the Caspian basin and trans-Caspia, Baluchistan and central Arabia were peripheral to the original centres. According to this view, these centres should be sought in the hilly country along the east end of the Mediterranean from Palestine and western Jordan, through Lebanon and Syria to southern Turkey, and northern Syria and Iraq and southern Iran as far as the Zagros mountains. The first of these strips of country contains the basins of the Jordan and Orontes, the second the drainage of the Euphrates, Tigris and their tributaries.

Palestine was certainly very much involved in this momentous revolution. It has already been shown that in the Natufian it possessed a culture which better than any other represents a still predominantly hunting people beginning to harvest grain or seeds. At the famous *tell* of Jericho, an oasis lying nearly one thousand feet below sea-level in the Jordan valley, we can see this culture developing into a full Neolithic one. The first event at this most historic site seems to have been the establishment of a shrine, probably dedicated to the life-giving properties of the spring, by hunters with a Lower Natufian culture. This was followed by the same people settling down in a permanent or regular seasonal settlement, living in flimsy huts of a kind appropriate to a semi-nomadic existence. This settlement, which may be called proto-Neolithic, developed without a cultural break into a full Neolithic community which, with its substantial houses and defences, has been claimed as a true town. Here in the first town of Jericho the stone implements still show a Natufian inheritance. Carbon-14 dating has assigned an age of about 7800 BC to the shrine and indirectly one of at least 7000 BC to the beginning of the full Neolithic phase.

Thus there is no doubt that at Jericho the eighth millennium saw the local evolution from a Mesolithic hunting to a Neolithic farming economy. But this is not likely to have been the only area where this all-important change took place. Another village site that might be expected to contribute to our knowledge concerning the step to a farming economy is Qalat Jarmo on a spur of the Kurdish hills in the Tigris drainage area. Economically it does so, for the earliest of this series of superimposed hamlets look as though they were inhabited by a community very near the beginning of food production. Carbon-14 dating has given somewhat conflicting dates for Jarmo. The readings at first suggested an age on either side of 4750 BC, but more recent tests have pushed it back as early as 6500 BC. Here, however, there is little

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in the range of flint and obsidian tools to prove descent from the Natufian culture; equally they fail to show any close relationship with the very late Gravettian of the nearby caves of Zarzi and Palegawra. Nor do they derive from the culture known from Karim Shahir and Shanidar which was a parallel development to the Natufian.

There are two other sites evidently of great importance for the tracking down of farming origins. They are the Belt and Hotu caves, lying close together above the southern shores of the Caspian Sea. In the Belt Cave purely Mesolithic occupation was succeeded by a Neolithic one that contains some of the oldest dated remains of domesticated animals, perhaps about the beginning of the sixth millennium BC. Yet here there is no clear continuity between the two: the Neolithic culture cannot be said to derive from the Mesolithic.

Perhaps the best way to convey a picture of the beginning of the farming life will be to describe the particular sites already mentioned before going on to a more general account of the early Neolithic age in south-west Asia. They are undoubtedly among the earliest examples of their types of site known to us, and if we advance from a cave-dwelling occupied by still unsettled stock-breeders, to a permanent village and then on to a stone-walled settlement so substantial that it merits the name of town, we must in fact have followed the economic course of the Neolithic revolution. Also Belt Cave, Jarmo village and Jericho between them span the whole region within which farming is likely to have originated.

These sites represent different aspects of the pre-pottery Neolithic cultures now known to have been widespread in south-west Asia, and which further research may conceivably show to have spread far into Europe as well. The first stock-breeding inhabitants of Belt Cave had no pots; at Jarmo potsherds were only beginning to appear in the latest hamlet; while at Jericho two successive occupations had accumulated four-fifths of the Neolithic *tell* before potting was introduced. This pioneer phase, then, is clearly distinguished from the well-known later Neolithic (or Chalcolithic) cultures of south-west Asia which were emerging by the middle of the sixth millennium BC, and which are distinguished by their fine ceramics. Evidence for the westward spread of pre-pottery Neolithic is still sketchy, although there are a number of possible sites in Thessaly. At Khirokitia in the south of Cyprus a large farming community was established by 5500 BC. Although at first a few clumsy attempts at potting were made, the craft was completely abandoned in favour of excellently-made stone vessels.

The first occupation of the Belt Cave was by Mesolithic seal hunters who probably lived there at the end of glacial times some eleven thousand years ago; there followed a second, still Mesolithic, occupation dating from the seventh millennium, and then a third when the cave-dwellers may or may not have raised grain but certainly possessed domestic sheep and goats. Carbon-14 gave this horizon a date of 5840 BC with an error of some three

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hundred years either way. During the second half of the same millennium true mixed farmers were living in the cave, people who had sickles to reap grain, made pottery of a rather soft and poor ware and in addition to sheep and goats kept first pigs and then cows. The neighbouring cave of Hotu seems first to have been lived in during this last Neolithic occupation, but it continued to be inhabited after the Belt cave had been abandoned. The rubbish of the last occupation included fine, hard, painted pottery of a kind not quite identifiable with any known elsewhere.

The people of Jarmo evidently lived more or less permanently in their little village, building multi-roomed rectangular houses of compacted clay or pisé (Fig. 38A), sometimes set on stone foundations and with reed floors. They had such built-in furniture as baking ovens and basins sunk in the floor. Although they did not know how to fire pottery, even the earliest inhabitants cut and ground excellent bowls and other vessels from smooth stones of pleasantly variegated colour; they used stone also for such personal ornaments as beads and bracelets. They possessed that most distinctive Neolithic tool, the ground and polished stone axe, and its variant, the adze. Other agricultural tools were sickles and simple grain rubbers or querns. They imported obsidian for tools and also used chert; and a considerable part of their equipment was microlithic, suggesting a strong inheritance from Mesolithic tradition. The main crops of these villagers were emmer and einkorn wheat, and barley, but their emmer was more primitive than any other cultivated wheat known to us, its spikelets varying so much in size and form as to make it evident that very little selective cultivation lay behind it. As for their stock, almost all the bones belong to the domesticable species of sheep or goat, ox, pig and dog, but it cannot be proved that they were all fully domesticated. For their household divinity the people of Jarmo evidently revered the Mother Goddess, possessing clay statuettes of her seated figure. They also made little clay models of their livestock that may have been used for magical or religious cults.

Some account of the early happenings beside the perennial spring at Jericho has already been given. We have to picture first wandering parties of hunters and food-gatherers visiting their shrine, probably only at certain times of year. Then the growth of a permanent or semi-permanent settlement of clay and wattle huts whose owners, while still making their tools and weapons much as before, were probably now beginning to practise the cultivation of grain crops on a modest scale. Next, about nine thousand years ago these same people took a step forward, and on the remains of a long series of collapsed and rebuilt huts of the first rough settlement raised much more substantial round houses, probably looking like a cluster of large beehive ovens, and defended them with a strong masonry wall and a round tower. This earliest full Neolithic settlement at Jericho has quite properly been called a town.

Not enough has been excavated of this most ancient town for it to be

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possible to say very much about the lives of the population. Their stone implements still show their descent from the Lower Natufian tradition; they had large stone querns for grinding flour by rubbing. As we have seen they had not learnt the art of potting. The sun-baked bricks from which their houses were built were of a highly distinctive form (p. 287).

Of the second pre-pottery Neolithic occupation at Jericho much more is known. The older population seems to have been completely supplanted by a new one with a distinct though indirectly related culture. This is the Tahunian culture which hitherto has been known only in a far more humble context. As they have been known away from Jericho the Tahunians led a semi-nomadic life, maintaining the Mesolithic tradition of hunting, food-gathering and living in caves, even while they practised shifting agriculture and kept herds of goats. Their culture, too, had been derived from the Lower Natufian, but along different lines from that of their predecessors at Jericho. How the Tahunians acquired the enviable oasis and came to lead there a quite elaborate urban existence is a historical problem as yet unsolved. Certainly their lives must have contrasted with those of their cave-dwelling kinsmen almost as sharply as those of the modern city-dwellers of Palestine with the lives of the Bedouin who pitched their goat-hair tents not far from the city suburbs.

The domestic architecture of this second pre-pottery Neolithic town of Jericho was far more advanced than that of the first. As we shall see (p. 287) the houses were rectangular, of an elaborate courtyard plan and quite excellent in their finish. One house seems to have had a little chapel with a cult stone set on a pedestal in a niche, while a large rectangular building with a stone basin is thought to have been a public temple. The massive defences were maintained with a few alterations. It is estimated that this Jericho of the later seventh millennium BC with its houses packed inside its walls must have had a population of at least three thousand.

Like the villagers of Jarmo, the citizens of Jericho used bowls and dishes cut from stone. These were of the soft local limestone which could be given a pleasantly polished surface. It seems very likely that they also had containers of leather and of wood. For their tools they used mainly flint but occasionally obsidian. The relatively large numbers of sickle blades, typically with finely serrated cutting-edges, together with many querns, are a proof of the importance of agriculture. No hoes were found, and the presence of many perforated stones suggests that weighted digging sticks were used instead. The oasis may have been the centre of irrigated gardens and orchards, but we have as yet no tangible evidence for the cultivation of vegetables and fruits at this early date. Few bones of domestic animals have been discovered, but in the neighbourhood of the temple building there were a number of rough clay models of goats, sheep, cattle and pigs that appear to represent domesticated livestock. A great proportion of the bones found were of deer and other wild species, and

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these, together with the arrow-heads, are enough to prove that in spite of its urban pretensions hunting was still of substantial economic importance at Jericho.

The presumed temple with the little clay figures suggests some kind of animal cult inviting comparison with Jarmo. Two female figurines of the Mother Goddess type were also found in the vicinity. The most remarkable cult objects from the Jericho of this phase, however, are embellished skulls. These are human skulls, usually though not always without the lower jaw, that have had the flesh parts reproduced in clay and cowrie shells set in the sockets in a most striking semblance of eyes. Several skeletons with the skull removed but with the lower jaw still in position have been found in the settlement, suggesting that these were native dead and not the loot of head-hunting or war. This could, indeed, already be inferred by the skilful care taken in modelling the faces and the fact that they were carefully buried under house floors. One can suppose that the people of Jericho wished to keep the ancestral spirits with them. A bone bead carved in the form of a head gives a further hint that some cult of the human head was established among them.

Why was Jericho so exceptionally progressive? Why were three thousand people living there in comfortable houses when all around them their contemporaries were living in rough little hamlets or caves? The explanation seems to be in the fact that Jericho grew up beside a very important oasis. Not only did this perennial water supply encourage good cultivation of both grain crops and, possibly, orchards, but its management necessitated social organization and the feeling of community. Just as the need to co-operate in hunting animals much stronger and more fleet than themselves must have extended social obligation outside the bounds of the family in Palaeolithic times, so now the control of irrigation demanded a new sense of co-operation and respect for law in a settled population.

A word should be said about the later Neolithic occupation of Jericho after its citizens had taken to the use of pottery. The first pottery was rather soft, tempered with chaff, of a drab colour sometimes enlivened by the use of a pink slip. At the same period the inhabitants began to store their grain in pits lined with unbaked clay, recalling those at Tell Hassuna. A model of a two-storeyed building, possibly a granary or sanctuary, gives a rough impression of the contemporary architecture. But what is really remarkable in this settlement (known to archaeologists as Jericho IX) is the evidence it provides for a local pantheon. A shrine housed three images, made of unbaked clay with shell eyes, representing a bearded man, a woman and a child, a most interesting trinity to find being worshipped six thousand years ago.

The Belt cave-dwelling, the village of Jarmo and the larger settlement of Jericho have been singled out because they represent some of the earliest steps towards the achievement of the Neolithic revolution. Belt has early evidence for domestic animals; Jarmo is one of the oldest settled villages

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as yet unearthed, while Jericho is an astonishing proof, still hardly assimilated into our understanding of the period, as to how quickly organized community life could be achieved on a large scale once the farming economy had been established. It is difficult to follow these studies with any generalized account of the peoples and cultures of these regions during early Neolithic times: almost every site seems to have its own localized culture. This, indeed, must to some extent represent the truth: every community made its own adjustments as it took over agriculture and stock-raising and began to settle into permanent villages (Map VII). A few sites, however, can be recognized as representing cultures that had at least a modest range and some influence beyond their own immediate area. One of these is the Tell Hassuna in Assyria on the west flank of the Tigris that appears undoubtedly to have been founded after the first occupation at Jarmo. The earliest settlement here has much in common with the earliest at Nineveh and at Matarrah; it even seems to have had some influence as far west as the Amouq—the plain of Antioch. The inhabitants of this village, happily situated at the junction of two perennial streams, from the first made pottery. Almost from the beginning, too, they were capable of producing pleasing painted and incised wares, the painting usually showing simple rectilinear patterns in black. Their pisé houses were both round and rectangular and were equipped with ovens and clay-lined storage pits (the earliest form of storage was in large roughly fired jars sunk into the ground). These stores, primitive saddle querns and broad-bladed chipped stone hoe-blades show the Hassunians to have been considerable agriculturalists, while the bones of cattle and sheep or goats seem to be those of domesticated flocks and herds. At the same time the villagers hunted such wild game as gazelles and onagers with slings and darts. Here again as in nearly all Neolithic peasant settlements from south-west Asia to Britain, a Mother Goddess appears to have been venerated and was made visible in the form of clay figurines. In short, the Hassuna culture shows a way of life only a little advanced from that of Jarmo, the innovations being pottery, hoes and better means of storing grain; it may well be that the wheat itself had been improved by selection beyond the haphazard crops sown at Jarmo.

In the later settlements towards the top of the Hassuna *tell*, where the houses had several rooms fitted with pivoted wooden doors, the inmates were using, as well as their own painted and incised earthenware, pottery which was slipped and painted with extremely effective designs. These include both patterns seemingly derived from basketry, and amusing stylized animal figures. This attractive crockery is known as Samarra ware and it is rather more widespread than the Hassunian. It has been found at Nineveh, Matarrah and at Chagar Bazar, while the site after which it is named is a cemetery situated just above the Tigris mud-flats some way to the south of Hassuna, where some fine specimens of it had been placed with contracted burials. Altogether it was used from Sakje Geuze west of the Euphrates to beyond the Tigris in Assyria, but it seems usually to have been acquired by

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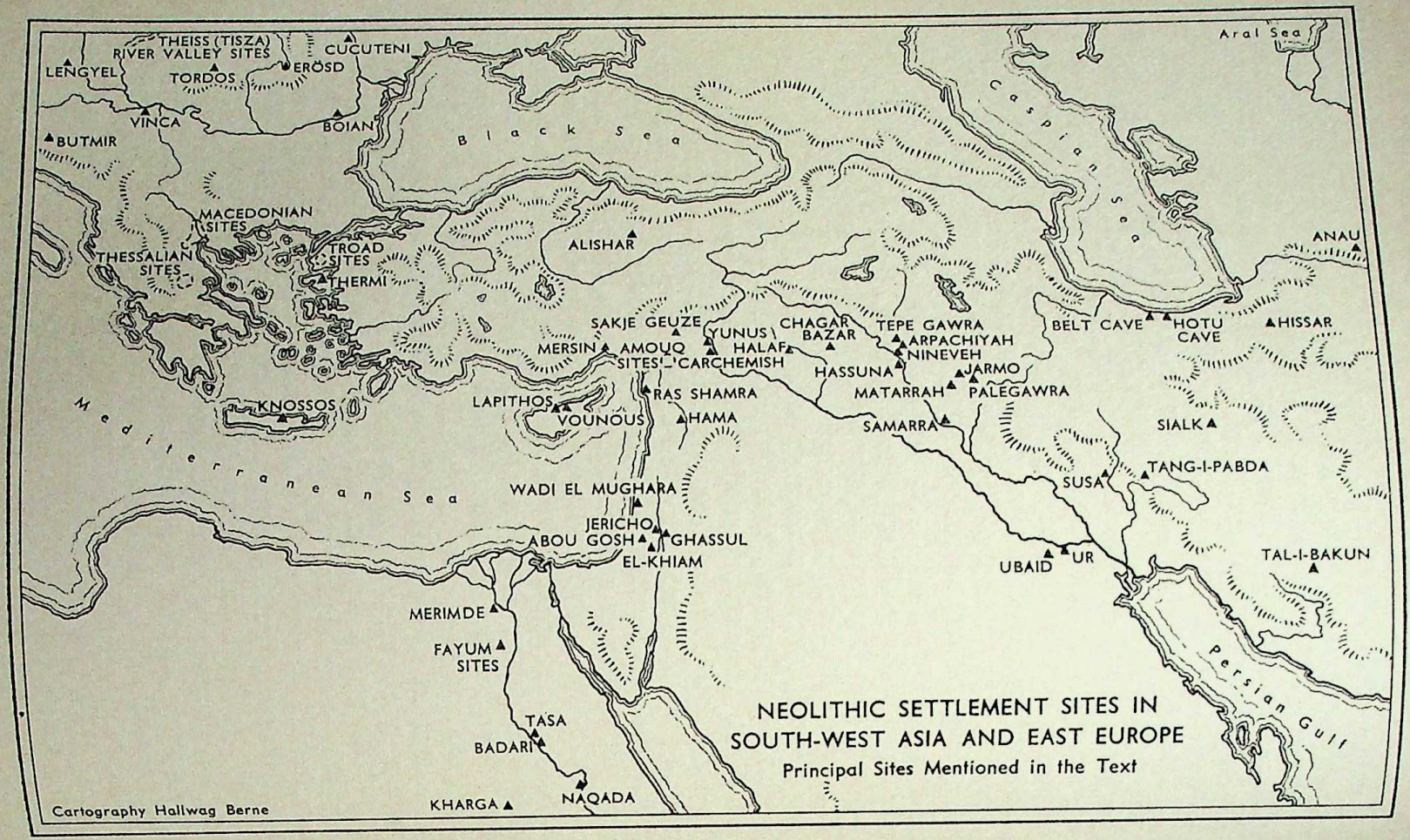


MAP VII

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local peoples as a pleasing possession, and it is hard to define a true Samarra culture.

As for the absolute dates during which farming was being adopted and developed here, round the upper Tigris and Euphrates, the early Hassunian settlements must have been established about the middle of the sixth millennium, while the popularity of Samarra ware was a little later.

What is quite certain is that the Samarra period overlapped with that of a culture known as the Halafian, and the Halafian is a full Neolithic culture. Tell Halaf itself is well to the west of the sites hitherto discussed, lying near the head waters of the Khabur. The culture, mainly, it must be admitted, distinguished by its pottery, made its influence felt from the Iranian foothills east of the Tigris right across the parkland of the upper Tigris and Euphrates and their tributaries to the Mediterranean coast of southern Turkey and Syria.

Many of the great *tells* of this region, in addition to Hassuna and Halaf itself, have their Halafian horizon; Nineveh, Carchemish, Arpachiyah among them. Although hunting with the sling continued as before, mixed farming was now fully established, with cultivated varieties of emmer and barley, two distinct breeds of cattle, sheep, goats and pigs. There does not seem to have been much change in domestic architecture from that of the later Hassunian type of house, but curious circular buildings with low domed roofs were a new introduction almost certainly intended for ritual use. At Arpachiyah, where the Halafian settlement was rich and long-lasting, cobbled streets survive to give us some idea of the town-like atmosphere that must already have existed among close-packed houses.

The Halafians were skilled workers in stone, able to use obsidian for vases and beads; they were also evidently practised in that second craft that goes with potting as one of the great Neolithic inventions—spinning and weaving. They even possessed small beads of copper, but these seem to have been obtained from native copper and do not imply a knowledge of metallurgy. Chert and obsidian remained the material for tools, and the forms do not show any very significant change from the Hassunian—polished stone axes and adzes, obsidian knives and sickles, coarse chert hoes.

The Halafians were pre-eminent as potters, using kilns in which they could raise a temperature of 1,200° F. Their wares were hand-made but extremely thin, usually a creamy buff with a slipped surface. Shapes were elegant and of the highest aesthetic merit, while painting was used to give (in the finest pieces) a rich polychrome effect in red, black and white on buff beneath a lustrous surface. Many of the patterns were geometric, and might converge on a central rosette or Maltese cross, but in Halafian as in Samarran ware, deer, horses, and bulls' heads, all highly stylized, were also deftly shaped into the design. This fully developed Neolithic culture is generally thought to have originated in Assyria, where a steady cultural development can be observed, particularly in the pottery.

Pushing on now to the easternmost limit of the possible cradlelands of



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farming, we have to consider Iran. In the Zagros foothills sites such as Tang-i-Pabda and Bakun probably represent early, pre-Ubaid settlement (p. 231), but too little is as yet known of them for it to be possible to judge their significance. Inland, on the Iranian plateau near Kasan, an important settlement grew up beside an oasis at Sialk. The earliest village here appears to have been contemporary with the Hassunian and Samarran, while the second shows signs of Halafian influences. At the very beginning of the settlement, the villagers may have lived in reed huts, but they soon moved into pisé houses. They practised mixed farming with cattle and two breeds of sheep. Their grain crops have not as yet been identified, but they were certainly of great importance in their economy. The fields were prepared with hoes and the harvest reaped with sickles made of rib-bones set with flint teeth. The handles of these sickles were sometimes carved with naturalistic figures, making them surprisingly similar to their faraway Natufian counterparts. One of these carved sickles affords a glimpse of the peasants who wielded them: a stocky little figure wearing a kilt fastened at the back and what looks like a band tied round his forehead to catch his sweat.

Here, as in nearly all the other villages of the time, hunting was still a necessary part of life, the men going out with slings and clay pellets in pursuit of gazelle and other game. Sialk was truly Neolithic in culture, yet a few pins and little awls of copper were in use there; like the beads of it at Tell Halaf, they were probably hammered from native metal. Cosmetics, ground by means of miniature clay pestles and mortars, appear to have been in use among the living, while the dead, buried in crouched positions under and between the houses, were customarily either painted or sprinkled with red ochre.

In the later village, where Halafian influence has been detected, mud bricks were used for building, pig and horse bones appear (though their owners may not have been domestic breeds), hoes were improved, rather more native copper produced and trade extended to bring in turquoise, carnelian, and beads from the Persian Gulf.

In Turkmenia a number of communities forming a single cultural group developed towns round the oases in the foothills of the Kopet-dag. These people lived in pisé houses and made painted pottery, usually dark brown geometric and tree-branch designs on a whitish or red background. At one town, Kara-tepe, the excavators believed they had identified a shrine where both the floor and two square altars had been painted black. Here again the economy depended upon the cultivation of wheat and barley and the raising of sheep or goats. These towns appear to date from the third and fourth millennia BC with the earliest settlements on at least two sites (Jeitun and Namazga) going back as far as 4000 BC.

Returning once more westward after having pursued farming origins to the eastern extremity of our region, a crossing of the narrow mountain belt dividing the Euphrates from the Mediterranean drainage brings us to the

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relatively well-watered lands of the Orontes basin and the Syrian coastal plain, the Amouq and eastern Cilicia. Here again are early Neolithic villages which had had a long history before the arrival of Halafian influence from the east brought painted pottery and the use of the sling. This influence made itself felt as far as the Mediterranean coast at Ugarit (Ras Shamra), and on to the *tells* of Judaidah and Kurdu on the Amouq plain, where, however, the Halafian pottery was at first merely imported. There are signs in the repertory of stone implements used by the earliest villagers, and particularly in their microlithic forms of descent from local Mesolithic cultures of the Natufian type. But still no direct links have been proved.

The early villages of this whole region have a considerable degree of unity. From Byblos, Hama (in the Orontes valley) throughout the Amouq to the important site of Mersin in Cilicia the earliest settlements have a culture distinguished by a dark-faced, burnished pottery often with incised geometrical designs. Polished axes, toothed or other flint and obsidian sickle-blades, projectile-points and stone vessels were generally in use among them from the first. Usually, too, the houses seem to have been of pisé, roughly rectangular in plan and, at Byblos and Ugarit, with limed and burnished floors reminiscent of Jericho. Not very much is directly known of their cultivated plants or livestock.

No pre-pottery Neolithic settlements have as yet been recognized in all this region; if in time they are, their relationship with Mesolithic tradition should prove significant.

While the Halafian culture and its influences were spreading widely from their probable homeland in Assyria, a new culture was coming into being in the lower reaches of the Tigris-Euphrates valley, particularly at the head of the Persian gulf where the heavy silt brought down by the rivers had built up a relatively young and intensely fertile land. It is named after the Sumerian *tell* of al'Ubaid; its creators accomplished the heavy but rewarding labour of draining and irrigating this valley bottom where fertility was annually renewed by flooding as effective as that of the Nile valley, if less regular. 'The many channels and lagoons teemed with fish; wild fowl and game swarmed in the reed brakes; date palms grew wild. But the exploitation of this natural paradise, the original Eden, required intensive labour and the organized co-operation of large bodies of men.' This the Ubaidans achieved during their long history, irrigating their farms and developing an agriculture able to support a rapidly growing population. Thus in time their culture became powerful enough to spread right up the valley and as far west as the Mediterranean, everywhere overtaking and supplanting the Halafian. Where these people, who can already be called proto-Sumerians, came from is not known, but they may well have been of mixed origin, derived in part from farther south, in part from the Iranian highlands. Another possible interpretation is that the Ubaid culture was born of a fusion of Halafian and Samarran elements with an earlier element already present in southern

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Mesopotamia. They had to import nearly all the raw materials for their equipment, such as stone for axes and hoes, and obsidian and chert for knives and sickles. This lack of local stone stimulated the use of a more durable substance—copper—which, although evidently remaining rare, might be used for such substantial implements as axes and small spear-heads. Their architecture, originally in reed, presently came to include building in sun-dried brick. It was the earliest Ubaidans who founded the original settlement at Eridu, establishing a modest little temple there that was to be enlarged again and again by successive generations until it became the great temple of Enki in the first royal city of the Sumerians. Thus their story is already the prologue of history. With the spread of Ubaidan culture round about 4000 BC the full achievement of the Neolithic revolution, which is the proper subject of this chapter, was brought to a close.

The story of the introduction of the Neolithic way of life in Egypt can be made simpler and more coherent than is possible for south-west Asia. Partly this is because it is now almost certain that it was introduced when already some way advanced, partly because of the far greater geographical unity of ancient Egypt. This unity can be exaggerated, for while Lower Egypt was always accessible from the Mediterranean, Upper Egypt was sometimes penetrated from the Red Sea. Nevertheless, when compared with the broken and scattered lands we have been considering, Egypt was compact and culturally already far more uniform.

The arguments against stock-raising and the cultivation of cereals having been initiated in Egypt are put forward in the chapter on the origin of the domestic species of plants and animals. The likelihood of mixed farming having been introduced from south-west Asia is clearly very great in the light of what has already been said concerning that area. Probable Asian elements will be noticed in the early Egyptian farming communities to be described, particularly in those of Lower Egypt. On the other hand there must have been a large native element in the population that would have maintained its own cultural traditions. There is no sign of any inheritance from the poor and unoriginal Sebilian culture of Mesolithic times, but the fine bi-facial pressure-flaked flint implements that already formed part of certain of the Egyptian Neolithic cultures and were developed with superb skill during the later pre-Dynastic period, may well have grown out of the north African Aterian culture or the Stillbay of east Africa. This powerful native element from the first helped to give Egyptian civilization its own distinctive character—what has been called its 'cultural form'. In it we can see the origin of the Hamitic vein in Egyptian language and ethnical stock.

At the beginning of Neolithic times the lands bordering the Nile valley were very much less arid than today, when there is virtually no rainfall south of Cairo. In late glacial times, as has been shown (p. 26), the high plateaux were grasslands, while the wadis running down into the main valley were full of vegetation and abounding with wild animals, including giraffe and lion.

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Well on into historical times the Egyptians were able to go out hunting such game, as is vividly recorded on the walls of tombs. As for Libya, it remained a fertile land rich in vineyards, olive orchards and cattle to the end of the second millennium BC. Nevertheless, progressive desiccation marked the period from perhaps 7000 BC onwards, turning the plateaux from grassland into steppe and ultimately into desert, while making the swampy valley itself more habitable. If this was true of the Tigris-Euphrates valley, it was far more dramatically so in Egypt where the early farming settlements away from the valley bottom had to be abandoned, often after long struggles with encroaching sand.[2]

The early Neolithic cultures can from the first be divided into two series between Upper and Lower Egypt, but always, as will be seen, there is much in common between them, not only in the general way of life of self-contained peasant communities practising mixed farming, but also in more particular cultural traits. It is generally held that the Upper Egyptian Tasian is the oldest Neolithic culture yet to have been recognized in Egypt, and from it an unbroken sequence of developing cultures can be followed up to the beginning of Dynastic times. In the Delta region (including the Fayum) the record is less complete, partly because desiccation led to the early abandonment of the earliest settlements, more because the constantly changing course of the waterways and the accumulating silt must have swept away or buried countless other sites. There is thus good reason for beginning not with the Tasian settlement, but with those of Lower Egypt. In view of what has already been said it seems highly probable that the first farming communities were in fact established there, having spread by the coastal routes from Palestine. The Natufian site at Helwan (with an early Neolithic settlement close by) is of significance in this connection. Again, it satisfies geographical propriety to work up the river, and, more important, having thus reached the Tasian settlement it will be easy to follow through the rest of the Neolithic history of Upper Egypt and close the section within sight of Pharaonic times.

The Fayum depression lies to the west of the Nile some distance south of the Delta; it still holds a considerable lake, but in the fifth millennium BC the water stood 180 feet higher than at present, and the Neolithic settlement was ranged along the edge of it. The huts must have been flimsy, for no trace of them remained except sunken hearths and the storage pits, lined with straw matting, where the households kept their grain. From the first these peasants had the full complement of Neolithic culture; they grew emmer, wheat and barley, kept domestic cattle, sheep or goats, and pigs, grew flax and wove it into linen, made plain pottery and excellent coiled basketry. Their reaping knives were straight with serrated flint edges—very like the Natufian except that the haft was of wood—and they had the characteristic Neolithic axes with ground edges, some of flint, some roughly made from pebbles. Like the Asian early farming peoples we have been discussing, the Fayumis still hunted and fished. Hippopotami were among their game. Their

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arrow-heads were already very elegant with long slender barbs and they used maces weighted with a discoidal head of ground stone; their barbed fish-spears, like their sickles, recall Natufian forms.

Palettes used for grinding materials (later usually malachite) for painting the eyes are a characteristic part of Egyptian equipment that in Dynastic times were often most beautiful objects, superbly shaped and carved. The practice of eye-painting was evidently already known to the Fayum peasantry, who made their palettes of alabaster in a simple rectangular shape. As so often in Neolithic communities, personal ornaments were the only item in the economy to be imported. As well as strings of ostrich-shell disk beads (like those worn earlier by the Capsians), the Fayumis decked themselves with shells brought from the Mediterranean, Red Sea and even perhaps from the Indian Ocean. They also imported the decorative amazonite either from the central Sahara or the eastern desert. No burials were found anywhere among the Fayum settlements, which suggests that there must have been cemeteries well beyond the edge of the houses.

Radio carbon dates for two pits belonging to the oldest Fayum settlement are 4145 ± 250 BC and 4437 ± 180 BC. It seems likely that it was already flourishing during the first half of the fifth millennium, at about the same time that the Halaf culture was spreading in Iraq.

Another site that represents this Neolithic culture of Lower Egypt, probably in a later phase, is at Merimde on a sandy spur by the western edge of the delta. Here again at first the shelters must have been of the flimsiest, but later the villagers made huts with wooden posts supporting matting, and later again used beaten mud—possibly to get better shelter from the sand storms with which they were increasingly plagued. The hut of each household seems to have stood in its own garden or yard, aligned in rows that probably mark the course of village lanes. The practice of farming was almost identical with that in the Fayum except that in the later period the grain was stored in large jars. Though showing variations, most of their pottery, tools and weapons and personal possessions had much in common both with the Fayum and also to a lesser extent with Tasa. It is noticeable that their mace-heads were an Asian form, in place of the Egyptian disk type. The dead were buried among the huts, lying in the crouched position and generally facing towards the sunrise; they were not provided with food or any other grave furniture. In another village at El Omari near Helwan (the one known Natufian site in Egypt), in almost every other way similar to that at Merimde, the dead were all laid to face westward and one of the graves contained a carved wooden baton said to resemble the *ames* sceptre, that in the historical period was among the insignia of Lower Egyptian kingship. It seems to suggest that at least some of these early villages may already have been ruled by chiefs.

In spite of some weakness in the chronological framework, it is reasonably sure that while in the north the Fayum culture developed into the Merimdian,

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in Upper Egypt there was a succession of three cultures, the Tasian, Badarian and Amratian, all of them purely Neolithic, and all showing something of the distinctively African character that was to crystallize in Egyptian civilization.

The encampments on desert spurs at Tasa near Badari are usually recognized as representing the oldest farming communities in Egypt. Certainly they were the most primitive. Yet already they cultivated emmer wheat and barley, and ground the grain on large saddle querns. They seem also to have had herds of sheep or goats. It has been thought that these people may have lived like the Hadendoa, who until recent times were herdsmen in the eastern desert, but kept permanent villages near the Blue Nile where they regularly returned to raise a harvest after the annual inundation. Whether or not the Tasian encampments were summer villages of this kind, it should not be forgotten that by themselves they do not give a full picture of early farming life by the Nile. There must have been many shacks and clusters of huts on the ridges and hillocks that formed the ever-shifting and marshy valley floor. 'All traces of these settlements in the valley proper have long since disappeared; they have been not merely silted over but washed away by the changes in the river's course. This explains why we find traces of early settlement only at the edge of the valley, on the spurs of detritus at the foot of the high cliffs. We must imagine the valley, not flat and featureless as it is today, but dotted with hamlets perched on the high banks of former water-courses, and surrounded by an ever-changing maze of channels, marsh and meadow.'*

This, then, was the kind of prospect that would have lain below the Tasians as they worked at flour mill or loom, made their rough pottery or talked and idled outside their shelters. This, too, was the nature of the country they would have had to contend with when they went fishing with hooks of shell and horn, hunting water birds and swamp animals with bow and arrow, or to lead their goats in the *wadis* and to tend their plots on the alluvial spreads.

Like the Fayum people, the Tasians had alabaster palettes for grinding and mixing eye-paint, and ornamented their persons with ivory beads and bangles and shells brought from the Red Sea. Their dead they placed in the bent or crouched position, wrapped them in skins and buried them in straw coffins; such burials are few and scattered enough to indicate how small and shifting was the population.

The Badarian culture is probably a development from the Tasian, but its known range is greater, extending from Badari itself southward as far as Armant. It was present, too, in the Wadi Hammamat. Emmer wheat and barley were still the cereals cultivated, but the Badarians began to store the grain in mud-lined pits; they kept sheep, and unlike their precursors, were also cattle-breeders. There was still plenty of game on the plateaux as well as in the tributary *wadis* and the Badarians went hunting with bows and

* H. Frankfort, *The Birth of Civilization in the Near East*, p. 41.

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arrows and boomerangs; for fishing they used the same shell hooks devised by the Tasians. Their huts were still simple shelters of matting like those of the Merimdians, but in all other ways their domestic equipment was greatly enriched. In particular they were potters of exquisite skill and taste, turning out a thin, burnished ware with a softly rippled surface built by hand into plain but well-proportioned shapes. Often the body of the bowl or jar was brown or warm red and the rim black, an attractive scheme due entirely to the method of firing (p. 304). Other vessels were laboriously ground from basalt, and little flasks and vases carved from ivory. Also of ivory were the charming little ladles, the handle sometimes ending in an animal carving, that presage the long line of beautiful spoons made by the Egyptians in Dynastic times. Elephants (still living on the plateaux) also provided the material for ivory beads, bracelets, rings and other ornaments and for ornamental combs that were presumably worn by the women. Nose plugs were made of stone.

The Badarians, then, were a people living some way above subsistence level, with a margin of time and materials to beautify themselves and their possessions. This is further demonstrated by their ability to maintain a small trade in luxury goods, obtaining malachite for eye-paint from Sinai or Nubia, shells from the Red Sea, semi-precious stones such as turquoise and carnelian, and, most remarkable of all, cedar and juniper wood that may have been imported from Syria. That they made simple boats for navigation on the Nile is proved by the survival of pottery models. Badarian cemeteries, though small, are yet large enough to prove a growing population; the corpses, crouched or more gently flexed and wrapped in skins according to the traditional custom of the Tasians, were laid in trench graves and provided with pots of food and drink. Some graves were also furnished with female statuettes of ivory or clay. Among the Badarians, too, we seem to find the earliest examples of that ritual burial of animals that was later to be an Egyptian peculiarity; both cattle and sheep are known to have been interred with some ceremony.

If the culture of the Badarians already showed some style and an economic margin that allowed for the manufacture of luxury articles and the import of precious materials, that of the Amratians, which appears to be directly descended from it, is clearly approaching the threshold of civilization. It can, in fact, be set beside the roughly contemporary but rather later al'Ubaid culture of Sumeria as marking the close of the Neolithic phase that is the subject of this chapter.

The economic foundations were much stronger. The Amratians must have begun an extensive and systematic cultivation of the flood plain of the Nile, although there is no evidence as yet for artificial irrigation. They kept cattle, sheep and pigs, and are known to have used their cattle for dairying as well as meat production. They had probably domesticated the ass as a beast of burden, and had learnt to lash bundles of papyrus stalks together to make high-prowed boats already reminiscent of those that were to ply the Nile from

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Pharaonic until recent times. Although hunting still made a necessary contribution to the food supply, the solid economic basis to their way of life led to a great increase in population among the Amratians; villages were permanently occupied and cemeteries used for generation after generation, until they might contain as many as two thousand graves. Pictures of crocodiles, scorpions and other creatures that are neither livestock nor game animals have sometimes been interpreted to mean that these villages were occupied by totem clans—as is the case among the modern Dinka on the Upper Nile, one of the Nilotic peoples who appear to have inherited most both in culture and racial stock from an ancient Egyptian ancestry.

The craft work of the Amratians had developed beyond that of their Badarian forebears in everything except potting, where there was some falling off in their black-topped, white-painted, and incised wares. Their pressure-flaked flint work achieved perfection for the medium both in execution and form (Fig. 53), while their carving of ivory combs, ladles and vases was also finely developed. For weaving they used horizontal looms. Gold was now added to the precious substances obtained for ornaments, and native copper was used for pins and even for harpoon-heads—cut from hammered sheets. The palettes used for preparing malachite were now often given the shape of creatures—especially fish and hippopotami.

In the form of their stone vases, in their ladles, palettes and very many other products of their skill, the Amratians were beginning to manifest, quite unmistakably, something of the style, spirit—'cultural form'—that was to distinguish the long course of Egyptian civilization. This manifestation of the shape of things to come is perhaps even more clearly evident in their burial practices and other religious forms. The graves were still no more than pits, but they were furnished in a way that was to lead without a break to the elaborate and highly characteristic funerary customs of historic Egypt. Not only were the dead provided with weapons, ornaments and goods (Palaeolithic man did as much) but also with models of women and servants evidently prototypes of the later *ushabti*, and with scenes drawn on pots and slate plaques that must have had the same purpose as the paintings of worldly possessions and joys that enriched the walls of Dynastic tombs.

The Amratians, then, were still essentially Neolithic farmers living in large villages; another culture, the Gerzean, was to intervene between theirs and that of the First Dynasty. But just as with the Ubaidans in Asia, so the Amratians must be recognized as marking an end of that primary Neolithic way of life with which we are here concerned. Having brought the history of man both in Egypt and in south-west Asia to that point when the flowering of civilization in the two great valleys is about to begin, it is time to leave these central regions where the Neolithic revolution had its beginnings and follow its gradual spread into Europe and eastern Asia.

This account of the gradual spread of farming and other traits of Neolithic culture through the Old World will generally move with the foremost edge of

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the spreading tide, keeping pace with the primary Neolithic conditions already described in the lands of their origin (Map VIII). Little attempt can be made to follow either the secondary waves or the countless local developments that appeared in the wake of this initial spread. Thus while the cultural level remains roughly the same, the period of time will grow later and later as we move from the ancient centres of husbandry towards the peripheries. Meanwhile, however, it must not be forgotten that just as men were already beginning to live in cities in the river valley civilizations before the Neolithic economy had spread very far, so secondary and tertiary urbanized regions had grown up in the east Mediterranean, eastern Europe and India before the humblest forms of farming life had reached lands far to the east or west. Indeed, the growth of town life, so amazingly rapid in suitable conditions once its farming basis was firmly established, was one of the two principal causes of the diffusion of the new economy. As merchant traders went out from the cities to satisfy substantial needs for materials as well as the whims and luxurious tastes of town-dwellers, larger villages and then small towns grew up in territories with desirable raw materials, while the necessity for food to support the new specialist workers and traders carried farming farther and farther afield. The second powerful cause of such diffusion was a much more elementary one already inherent in primitive husbandry itself. This was the exhaustion of soils—common, before crop rotation and manuring, in all countries other than those most fortunate valleys where nature renewed fertility unaided. So in regions like the Danube, peasant communities had periodically to leave their settlements and clear fresh fields in places either uninhabited or still in the possession of hunters and food-gatherers. Commonly the cultures to be pursued across the continents will comprise most of the traits once held to be universally characteristic of the Neolithic stage: agriculture, stock-raising, the free use of polished stone axes and hoes, potting and weaving. But the tally was not by any means always complete. We have seen how, contrary to the old view, in some parts of south-west Asia and the eastern Mediterranean farming was being practised long before the invention of pottery. So, too, not only were certain crafts left behind (as weaving seems to have been in Neolithic Britain), but also in vast if desolate stretches of north-east Europe and northern Asia pottery and the use of ground axes were adopted by hunters and fishers who made no change in the way they procured their food. It should be added that this chapter cannot be extended to include the later partial diffusion of farming into the remoter lands of northern Eurasia; it must be limited to spreads that can still be more or less directly linked with the initial impulse from south-west Asia and Egypt—a decision that will fix its lower limit at not much later than 2500 BC.

It appears that the main stepping-off point for the spread of Neolithic cultures westward along the Mediterranean was from the eastern end of the sea, particularly from Syria and Cilicia. That there was also an African

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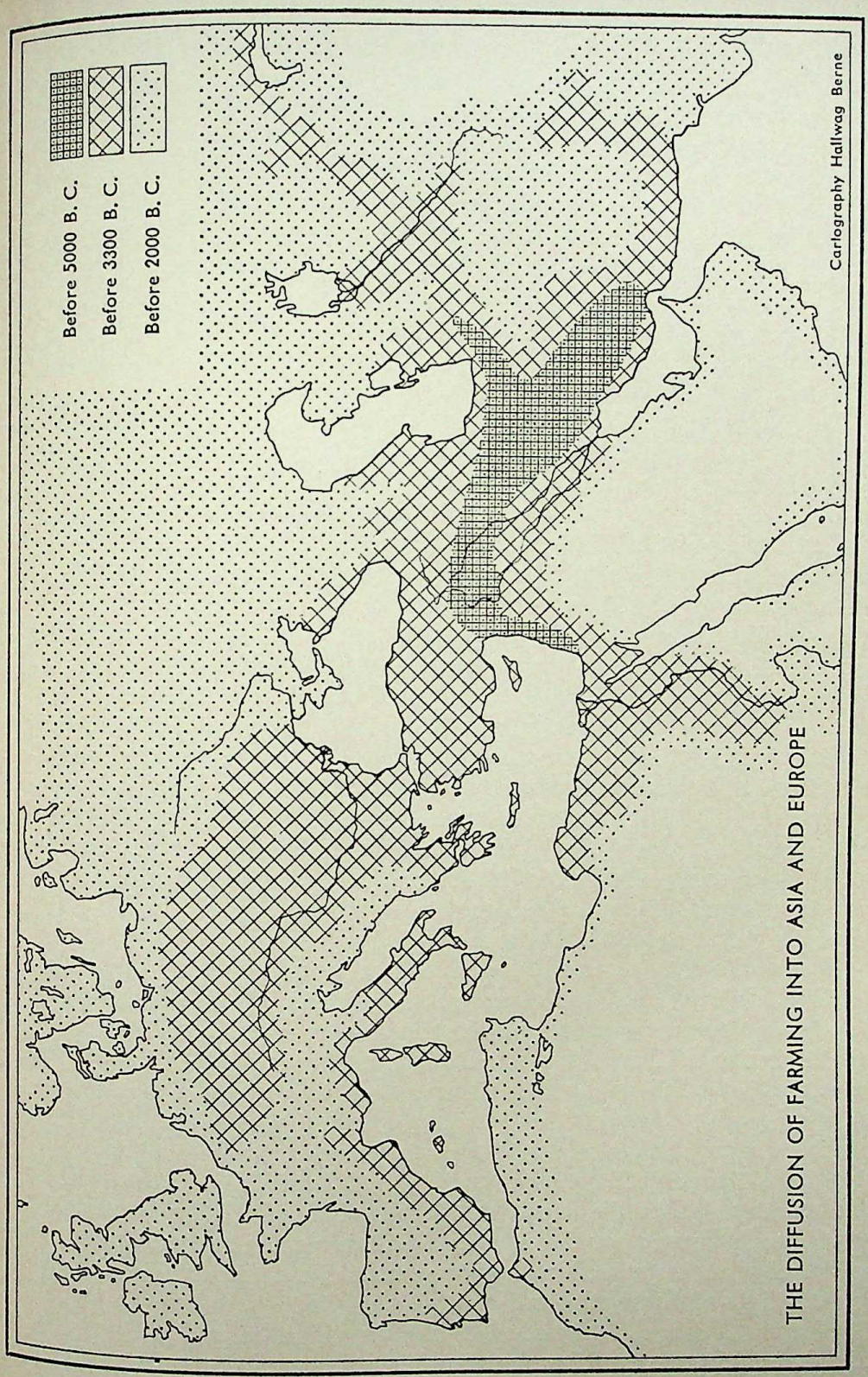


THE DIFFUSION OF FARMING INTO ASIA AND EUROPE

MAP VIII

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element from Egypt still remains probable, but it seems that this was felt mainly not in the initial diffusion of farming but in the secondary spread of the 'western' Neolithic cultures (p. 245). The earliest diffusion (unless indeed it proves that there was a 'pre-pottery' phase) is marked by a type of pottery with designs impressed in the clay before firing, often with the edge of a shell. This is the pottery of the oldest settlement at Mersin, and apparently also of Ras Shamra, Byblos and other Syrian cities. Westward it is found, always in the possession of the oldest farming communities, in Crete, Malta, southern Italy and Sicily, the south of France and the east coast of Spain. It also occurs on several small islands including Levkas, Lipari and Elba. The same tradition, it is claimed, is represented at a number of points along the north African coast.

This evidence, then, all points to a spread of peasant communities by sea, setting up their hamlets and villages, some of substantial size, at many fertile landfalls along all the coasts and islands of the Mediterranean. This great diffusion may have begun from its eastern sources before rather than after the beginning of the fourth millennium; how long it took before it was carrying the farming economy into France and Spain is not yet established. It may have been something over a thousand years. It must not be forgotten that the first farmers, save here and there on islands which had remained inaccessible to hunting people, were not the first inhabitants of the Mediterranean shores, and that their culture was variously affected by the Mesolithic hunters and food-gatherers among whom they settled. In many regions in the western Mediterranean these older populations adopted elements of the new economy but remained far less advanced than the villagers of, say, Crete and Sicily. They made much use of caves both as dwelling and burial places, and lived mainly by herding and hunting. In some regions, notably in Spain, this way of life was maintained for very many centuries, and made a continuing background to the copper- and bronze-using cultures of the more progressive people of the western Mediterranean.

Two of the most developed as well as best known representatives of this earliest Mediterranean Neolithic are both found in islands—in Crete and Sicily. In Crete such settlements must have been established already near the beginning of the fourth millennium, for before the first Minoan period at Knossos, Neolithic villagers had accumulated the detritus of their villages to a depth of over six metres. Evidently, then, the fertile lowlands offered stable enough cultivation for villages to be permanently occupied. The Neolithic Cretans lived in houses consisting of clusters of small rooms built on stone foundations, they used flat flint axes, obtained obsidian from Melos, made good pottery, revered a Mother Goddess, practised some form of axe cult and were in general perfectly representative of the earliest farming communities of the Mediterranean.

No trace of Palaeolithic hunters has been found in the island, and probably the first cultivators may have colonized it from eastern Anatolia or Syria;

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thereafter its position and the chance of favourable winds and currents made Crete readily accessible from all the eastern Mediterranean, including Egypt. Hence its rise to be the home of one of the most graceful civilizations man has ever achieved.

The next step of the maritime diffusion can be studied in southern Italy, particularly in south-east Sicily and Apulia. Here, probably before 3000 BC, peasants had established substantial villages usually enclosed behind a ditch and walls. They cultivated cereals (though their crops are not known) and in addition to the usual cattle, sheep, goats and pigs, are credited with having bred buffaloes. Evidently they were very successful cultivators for their villages are thickly scattered. To supplement basalt, quartzite and other native rocks used for polished adzes and rougher tools, they imported obsidian—probably from the nearest source in the Lipari islands where traces of their culture have been detected.

It was enterprising possessors of this Stentinello culture who went from Sicily to be the first colonists of Malta. They probably settled there during the last centuries of the third millennium. They and their descendants were responsible for the magnificent Maltese temples with their unique form of megalithic architecture and extraordinary cult figures of the Mother Goddess.

The first impressive sweep of Neolithic culture along the Mediterranean was soon followed by a second which did not, however, penetrate so far. Again the source appears to have been south-west Asia, which at this time can be seen as the heart of the Old World, pumping out pulses of cultural energy through the continents. While the Neolithic pioneers had fashioned impressed pottery, their successors made fine painted wares. Their spread into the Mediterranean can be seen as a continuation of that which brought the painted pottery makers such as those of Samarra and Tell Halaf into Syria and south-east Anatolia. There, too, they appear to have brought the earliest settlements of the impressed-pottery people to an end.

In exactly the same way painted pottery cultures succeeded the pre-Sesklo in Greece and the Stentinello in south-east Italy, Sicily and the Aeolian islands. Beyond this the impulse evidently died out, never penetrating with any force into the west Mediterranean. Another thrust of painted-pottery peoples carried them across north of the Black Sea; we shall find them spreading through south Russia into Roumania and the Balkans (p. 251).

Meanwhile we have to consider the great overland diffusion of Neolithic culture into western Europe which was the northern, continental counterpart of the southern, maritime spread already chronicled. The relationships of the painted-pottery peasantry and their predecessors with this remarkable diffusion along the Danube which penetrated as far west as Belgium is still obscure. First something must be said of the role of Anatolia.

Anatolia has been called the 'Royal Road to the Aegean', and the natural thoroughfare across the plateau from Asia, the 'Anatolian Rails'. Asia Minor

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was in fact a 'promontory of Asia thrust out towards Europe' and as such a most vital bridge for the transmission of culture from one to the other. Understanding of the earlier Neolithic history of central and western Anatolia is still slight. If the 'pre-pottery' Neolithic of Thessaly proves to be really of early date, then it seems probable that such a phase existed also in Anatolia. But it has yet to be proved. A trade carrying obsidian westward from a source west of Salt lake seems to have been of some importance from the beginning. Hajilar, probably the earliest Neolithic site in the region to have been excavated, is claimed to date from the mid-sixth millennium, roughly contemporary with the proto-Sesklo culture of Greece. Kum Tepe, in the Troad, dates from well back into the fourth millennium. In the first settlements at both Hissarlik (Troy) and Thermi, copper was already being worked. Both were from the first true towns, though on a small scale, and the inhabitants were certainly concerned with trade in the Aegean. The foundation of their economy, however, was prosperous mixed farming, with the cultivation of many cereals—wheats, barley, millet—probably of vegetables and fruits including the vine, and the raising of cattle, sheep, goats and pigs. As elsewhere, the fertility cult of the Mother Goddess appears to have been supreme for traders and farmers alike.

Similar Chalcolithic trading settlements sprang up throughout the Aegean, notably on the Cyclades, those islands that 'are remnants of a land bridge between Anatolia and Greece affording a passage for cultural ideas from Asia to Europe'. Generally small and barren, they had not been attractive to a peasantry devoted to the primary Neolithic way of life. To catch up once more with this, we have to move into mainland Greece, where by 5000 BC Neolithic villages were established throughout Thessaly and central Greece. These Sesklo folk seem to have been wholly peaceful; they used the sling for hunting, but relied on a form of mixed farming very much the same as that prevailing in Anatolia. There may have been seasonal movements with flocks and herds, but agriculture was sufficiently productive to allow villages to be occupied for long periods of time. Although very largely self-contained, these Greek villages imported obsidian.

In Macedonia natural conditions were very different, for the country was thickly forested and knew bitter winter weather. This may partly account for the fact that cultural developments here tended to lag behind those in the Aegean and to show a distinctively continental European complexion. The earliest known village in the region, on the Haliakmon, was evidently an outpost of the Sesklo people, but this element seems soon to have been absorbed into another, represented by the so-called Vardar-Morava culture. This culture is of the utmost importance for any understanding of the spread of farming peoples through inland Europe, for it extended right up to the Middle Danube and beyond to the Banat and Transylvania, and it is very likely that its creators introduced mixed farming to the Danubian region. If so they were in part responsible for the later extraordinary diffusion that

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carried it along the river valley and the surrounding loess lands until it reached western Europe. The Vardar-Morava cultivators, who may have played this vital role of transmitting the Neolithic way of life from the Aegean to the Danube, lived in wattle and daub or mud-brick houses, sometimes warmed by clay ovens. Their farming was very much like that already described; wheat and millet were grown and fig orchards planted, while livestock included the usual cattle, sheep and pigs. It has been suggested that although, as among the Sesklo peasants, this husbandry supported fairly stable villages, the shepherds carried out long seasonal treks with their beasts as the modern Vlachs of the Balkans do today. Deer were abundant in the forests and hunting seems to have kept some importance in their economy. Nothing shows more clearly than their excellent pottery, some polished and fluted, some painted, the connections of the Vardar-Morava culture3 with Greece on the one hand and the Danube on the other.

The glacial winds that laid down vast beds of loess from Serbia to Poland and westwards as far as Belgium prepared the way for Neolithic Danubian cultures, which, at least from Hungary to their western limits, were extraordinarily homogeneous. 'The loess lands north and west of the Danube were first occupied by a Neolithic population whose whole culture down to the finest details remains identical from Hungary to north Germany and from Galicia to Belgium . . . perhaps the most classically Neolithic culture in the ancient world.' Although, as has been seen, Palaeolithic man hunted mammoth across the loess (p. 86) a Mesolithic population has been detected only in the forest fringing it to the north and west. It is therefore not surprising that the peasants themselves seem to have been almost as homogeneous physically as they were in their habits and manufactures; not very many burials have been discovered, but almost all those known proved to be narrow-headed and generally of the 'Mediterranean' type.

Loess soil is very well suited to primitive agriculture, for it is naturally well drained and lightly forested and can be effectively cultivated with the hoe. In most regions, too, the water supply is abundant. The result of elementary farming methods on such light soil was a fairly rapid exhaustion of fertility. Always, however, virgin soil lay ahead, the old village could be deserted and fresh plots cleared and brought under cultivation. So the Danubian peasants thrust on and on along a broad corridor that took them through territories either uninhabited or thinly peopled by scattered tribes engaged in hunting and fishing.

In spite of considerable uniformity from end to end of this vast area of diffusion, three cultural groups have been distinguished during the earliest phase. The easternmost in the Banat and south-east Hungary had very much in common with the Macedonian Vardar-Morava people; indeed, they may simply have been a branch of this people who adapted themselves to life on the loess plains, or they may have been the descendants of an unknown Mesolithic population who had taken over the new economy. Certainly

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hunting with traps and bow and arrow and fishing with nets remained important to them, although they ran flocks and herds, kept pigs and practised the characteristic shifting agriculture. Their pottery, equally with the form of their cult objects, such as Mother Goddess figures and triangular altars, shows the close relationship (whatever its precise nature) with the all-important Macedonian culture. In north-eastern Hungary and Slovakia the people of the Bukk culture also continued to hunt and fish on a considerable scale, and even used caves for winter dwellings. In other respects they have very much in common with the great classic culture known to archaeology as Danubian I.

The economic basis of this culture (whose remarkable homogeneity has already been noticed) was the cultivation of cereal and other food crops, in little hand-hoed plots. Their main crops were einkorn wheat and barley, but they also grew emmer wheat, peas, beans and lentils. The numbers of cattle, sheep and pigs kept seem to have been relatively small. Unlike their eastern neighbours, the Danubian I people were a thoroughgoing peasantry, for whom hunting and fishing had ceased to have any considerable importance. It seems generally to have taken anything from a decade to a quarter of a century for all the plots within convenient reach of a village to become exhausted and a move to be made to a fresh site. Houses were very substantial rectangular buildings, sometimes as much as ninety by twenty feet, gabled, and raised on posts; perhaps migrating villagers may have carried with them some at least of the timbers for these fine dwellings. One of the best known of these characteristic Neolithic villages is at Köln-Lindenthal near Cologne, towards the north-western limits of the Danubian expansion, where there were numbers of houses protected by an entrenched palisade.

Such Danubian I communities were almost wholly self-sufficient, although hard stones for their hoes, adzes and axes might have to be transported over quite long distances. There was also a small trade in ornamental oddments, particularly in the Mediterranean mussel or spondylus shell that was carried from the Aegean or Adriatic as far west as the Rhineland. A piece of African ivory had reached a final purchaser near Worms in Germany. Lack of chiefs' houses or rich graves suggests an egalitarian society, and the Danubians are generally assumed to have been a peaceable folk (there was enough land for peaceableness) although presumably the heavy stone disk-shaped mace-heads found among them cannot always have served ceremonial purposes.[4]

Whether the Danubian I peoples were racially derived almost wholly from Anatolia or some adjacent Mediterranean region as their physical type, gourd-imitating pottery and fondness for Mediterranean shells suggest, or whether they represent a spread of the Vardar-Morava people, perhaps incorporating Mesolithic aboriginals, remains unknown. Radio carbon dating has given 4220 BC for a site in western Europe (Magdeburg in Germany). This Danubian peasantry was almost certainly the first to lead flocks and

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herds, to spread cultivated plots in the moist, Atlantic lands of western Europe. Yet it was not very long before they were to become neighbours to two other groups of Neolithic peoples, one to the north and the other to the south and west of them.

The latter were the western Neolithic peoples already mentioned as apparently including a considerable African element. Certainly their plain, baggy pottery has much in common with that of Egyptian Neolithic traditions. They seem to have reached the west Mediterranean (Spain and southern France, and north Italy) rather later than the impressed-pottery settlement, then to have pushed north and farther west along two routes. One from the south of France up the Rhone valley and one by sea up the Atlantic coasts of the Iberian peninsula, France and Britain.

Once beyond the Straits of Gibraltar coastal diffusion must have become more hazardous and bolder feats of navigation were called for. Undoubtedly some of the settlers along the stormy western and northern coasts of the British Isles must have been adventurous sailors. Nevertheless, even in these regions a gradual spread of settlements step by step along the coasts was quite possible, as was also the making of entries at favourable places and the steady penetration of the interior.

Among the earliest and most typical representatives of the western Neolithic cultures is that found in the Almerian province of south-east Spain. This corner of the peninsula was certainly settled by invading newcomers whose crafts and habits of life seem to have much in common with those of the Merimdians and Amratians of the Nile valley. Thus, though the line of their diffusion has not been tracked (there are hints of it on the north African coast) it seems that we have here a people of mainly African origin, perhaps mingling with the peoples whose spread along the Mediterranean had its first impulses from Asia and Anatolia.

These Almerians lived in villages of oval huts, their floors sunk into the ground and roofed with wattle and daub. They raised the usual flocks and herds and grew cereals, storing the grain in pit silos. They are the first people of the western Mediterranean known to have cultivated the olive, now so essential a part of the landscape. They also seem to have gathered wild grapes. They knew how to spin and weave, and good axes, adzes and gouges suggest they were practised workers in wood—it must be remembered that pines still cloaked what are now the stark hills of southern Spain.

Something has already been said of the western Neolithic cultures that represent the earliest arrival of farming peoples into much of western Europe. There is a good deal in the craft of their potters and in other traits to suggest that like that of the Almerians the culture of these farmers was of ultimate Egyptian inspiration. Indeed, in a rough and ready scheme of things (certainly over-simplified) the settlement of Almeria can be seen as a stage on the route from Africa into the west. In many areas this culture is met with only in relatively late local forms. There are traces of it in

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Provence, spreading up the east and on to the chalk downlands of the north. Even in this relatively harsh climate the defended village of oval huts with sunken floors, the mixed farming economy, are not so far removed from their counterpart at El Garcel—though the persisting Mesolithic traditions are stronger. But for the essential character of the western Neolithic way of life in an early and pure form the fullest evidence comes from western Switzerland, where the remains of lake-side villages have been wonderfully preserved. They were little clusters of wooden houses built on the marshy edges of many of the Swiss lakes. Presumably a heavy labour of forest clearance must have been undertaken with the stone axes and adzes that were stoutly mounted in antler sockets and hafted on to straight wooden handles. In the cleared land these Cortaillod peasants raised emmer, and probably also bread wheat and barley as well as peas, beans and lentils. They ate plums and apples, and although at first these may have been wild, apples were certainly later cultivated and brewed into cider. Cattle were more important to them than their pigs, sheep and goats, and these already skilful farmers collected their manure presumably for use on their field plots. Hunting was not of great importance, but people living at the water's edge were naturally fishermen, using traps, nets and perhaps also fish-spears. They grew flax and wove linen—though it seems that skins and furs still made their warmer clothing.

These Swiss villages, tucked away in their valleys near the threatening mass of the Alps, invoke a full realization of the power of the farming life, a power that carried it irresistibly into country utterly unlike that of the sunny cradlelands. One can imagine the pioneers arriving with a few beasts and bags of seed corn, clearing trees along the lake's edge and at once saving precious land and securing themselves by raising their houses above the mud.[5] Then within a few years cattle and sheep would be grazing where before there had been only wild animals, crops ripening where there had been forest, while many families would be busy with the tasks of husbandry where before no man had done more than loose a spear or an arrow, set a trap.

As has been said, western Neolithic cultures were carried on to the downlands of northern France, and indeed through many regions of France and Iberia, but they have hardly been distinguished in their primary form. A pure and early western Neolithic culture has, however, been recognized in Britain. Here once again it is evident that the first farmers arrived to find the country in the possession of Mesolithic hunters and fishers—descendants of the Sauveterrians and Maglemosians. The newcomers, known as the Windmill Hill people, must have brought cattle and livestock over with them in their boats, before settling first on the lightly forested chalk hills of southern England. They hoed plots for bread wheat and barley and kept sheep, goats and pigs, but cattle were their main concern—a rather robust, long-horned variety that may have had a mixture of the local wild aurochs.

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Their pots were of the plain 'leathery' type favoured by all the western Neolithic peoples; rather surprisingly there is no evidence that they practised spinning and weaving. There was hunting with bow and arrow, but it was of little importance in their economy. The Windmill Hill farmers are known sometimes to have lived in isolated rectangular houses, while a lake-dwelling in Cumberland recalls the Swiss villages; they made elaborately embanked compounds (p. 296) that seem to have been used for rounding up cattle in autumn rather than as permanent villages. Crude images of the Mother Goddess have occasionally been found in Windmill Hill encampments and tombs—marking the most westerly outposts of this far-flung cult so characteristic of the early farming peoples.

The date of the spread of the western Neolithic cultures has not yet been agreed, but quite numerous recent Carbon-14 estimations seem to show that France and the British Isles had been extensively settled before 3000 BC.

It has already been stated that after their penetration into western Europe, the Danubians later became the neighbours not only of these western farmers but also of another spread of Neolithic cultures affecting the extreme north. It had long been thought that Scandinavia remained in the undisputed possession of the Ertebølle and other Mesolithic hunters and fishermen until the arrival from the west of peoples distinguished by the megalithic architecture soon to be discussed. Now, however, it has been proved that farming peoples had advanced into both Denmark and southern Sweden before that time; and that they came from a south-easterly direction (Map IX). These Trichterbecher (or First Northern Culture) people were probably earlier settled in the eastern part of their range in Thuringia and Poland but reached Denmark and Sweden when the first farmers were arriving in Britain—rather before 3000 BC. They are known sometimes to have lived in long houses that must have sheltered very many families; in east Jutland one of two such communal dwellings standing side by side was as much as 85 metres long. They practised the usual mixed farming with barley and as many as three kinds of wheat (emmer, club and einkorn). As with the Windmill Hill people, cattle were their main support, and from the first they seem to have relied very little on hunting to supplement their beef, mutton and pork. There is vivid evidence (p. 284) to show how these newcomers tackled the forests with axe and fire to open up pasture and arable land.

Nowhere has more been discovered of the impact between farming incomers and native Mesolithic peoples than in Denmark. The Trichterbecher settlers undoubtedly lived as neighbours to the Ertebølle hunter-fishers during several centuries. They were in some kind of communication with one another, for odds and ends belonging to the Neolithic culture are found in the Ertebølle middens. Nevertheless the aborigines maintained their more primitive economy almost unchanged. What is interesting—and may well have happened elsewhere in forested regions—is that they actually

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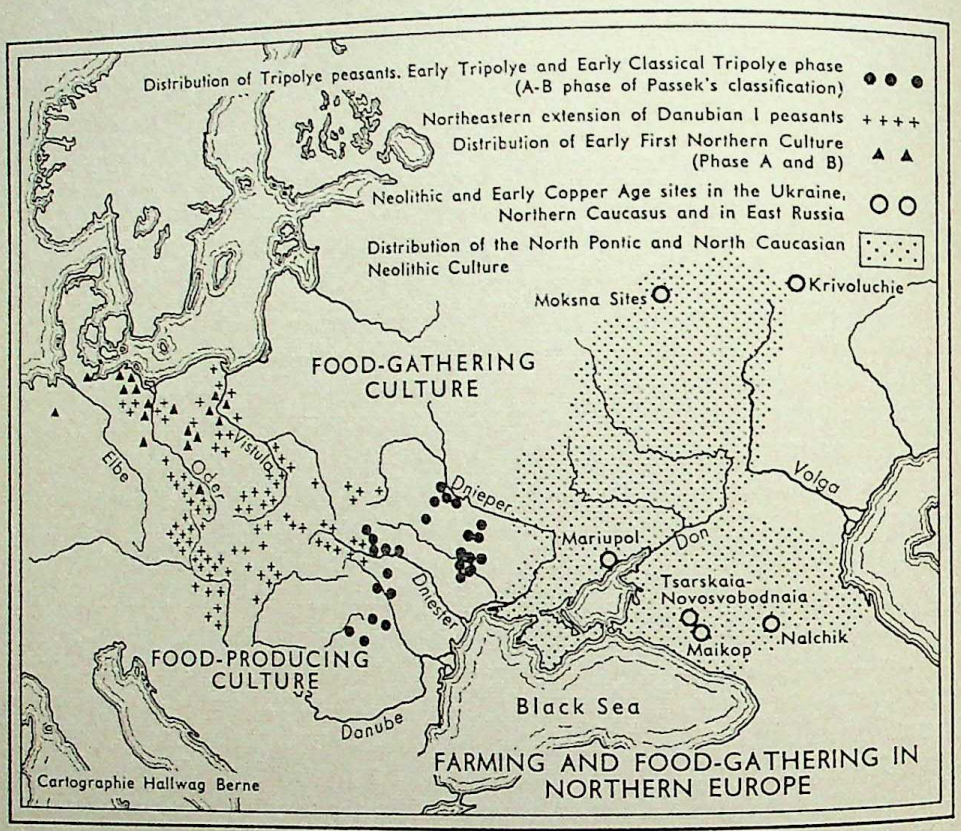
prospered for a time, evidently increasing in numbers and founding new settlements. Probably partial forest clearance provided better conditions for the red and roe deer on which they largely depended for their meat. There was no conflict until the farming population became dense; then the hunter culture disappeared as its people died out, migrated, or gradually adapted themselves to the new way of life. This did not happen until the middle of the northern Neolithic Age.




MAP IX

Although the three most important movements of peoples that brought the primary Neolithic cultures by land and sea to the extremities of Europe have now been described, a word must be said about the spread of megalithic architecture and nearly related forms of building[6] (Map X). This architecture, found all the way from the eastern Mediterranean to the Orkney and Shetland Islands and Scandinavia, has a conspicuously coastal distribution, suggesting its diffusion by seafarers. It was not a feature of the very earliest Neolithic cultures; nevertheless, in much of western and northern Europe it was adopted into these cultures at a relatively early stage and by the end of the third millennium was already their most striking achievement. Furthermore,

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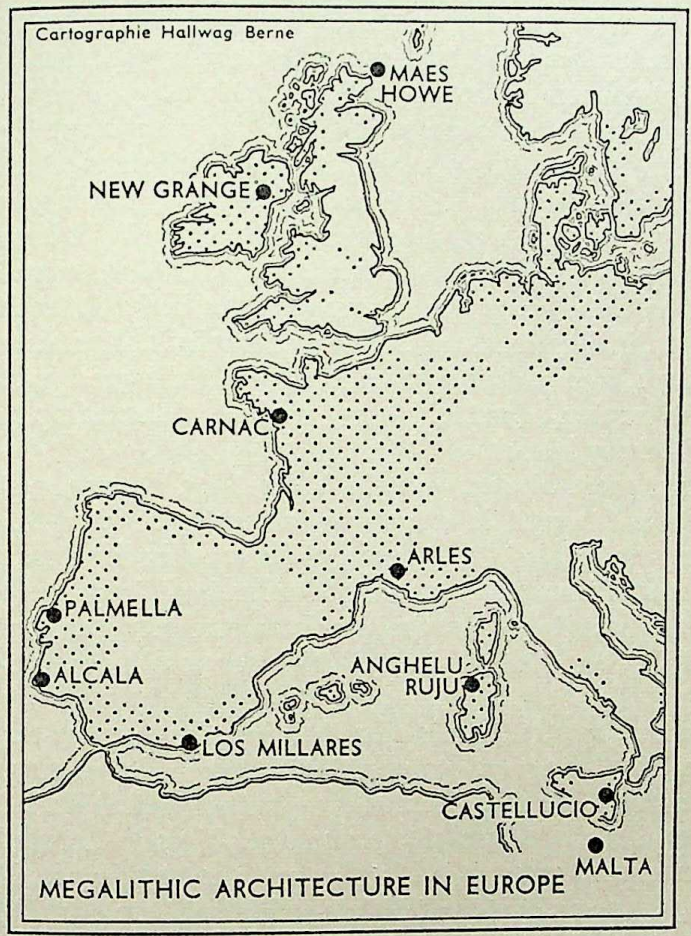
it is interesting in a history of culture in providing a primitive example of the spread of religious ideas in contrast with the actual movement of people that we have been concerned with hitherto.

It is an architecture that is principally funerary (though later other forms emerged, such as the temples of Malta and the sanctuaries and alignments




MAP X

of Brittany and Britain); but as evidently it went with a cult of the dead that had wider religious significance, it can be regarded as more than a mere building of tombs. Probably it came to be associated with the fertility religions of the Mother Goddess—whose image or symbols are reproduced in the tombs in more than one region—and that the earth-fast or rock-cut chamber embodied the idea of the return of the dead to the Mother for rebirth.

It is impossible to analyse in any detail the great variety of plans and modes of construction used in these tombs or to discuss their relative dates.

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Certain very widely distributed peculiarities such as small circular doorways, portals and forecourts designed for ritual use, serve to give a kind of unity to them all, while on the other hand certain consistent differences (particularly of plan) suggest a division into sects. Close parallels can be found in the various church plans characteristic of different sections of the Christian Church.

The beehive-shaped tholoi of the Cyclades and Crete make the most easterly representatives of the tradition, unless the Egyptian mastabas (which are *not* communal tombs) be included: probably they are an element in its genesis. Very similar tombs occur in Sicily, and they must lie behind the particular form that was to produce the most imposing of all megalithic tombs: the passage-grave. These were chambers, commonly roundish, approached by a narrower passage and often covered by a large, round or long mound to make them earth-fast and dark. They were built across southern Spain and Portugal, in Brittany, Wales, Ireland, Scotland and the Northern Isles, in Denmark and Sweden. Though the Iberian examples are striking enough, none is more magnificent than the great passage-graves, enriched with carving, of central Ireland, or those still standing in the remote and stormy Orkney Islands.

The second most distinctive form is the long, narrow, parallel-gallery grave, that was favoured in south-east Italy, all the west Mediterranean islands, along the line of the Pyrenees, in north-east France and Brittany, Wales, Northern Ireland and south-west Scotland and (very late) in Denmark and Sweden. The gallery-grave includes such strangely specialized forms as the Giants' Graves of Sardinia and the enormously massive *navetas* of Minorca.

Although here and there throughout their range the possessions buried with the dead in these great communal tombs suggest that they were introduced by invaders, far more often they were adopted as an innovation by local peoples and made part of their culture. Thus it seems all the more legitimate to suppose that their adoption was due to the spread of religious ideas and practices; their coastal distribution and the occurrence of particularly magnificent examples in remote places suggest that the inspiration and knowledge that went into their building may have been carried by missionaries, few in numbers but great in power. In any attempt to reconstruct the spread of the new way of life from the civilized east to the barbarous west the picture of humble peasant communities pushing slowly forward in quest of land must be set beside this contrasting picture of individuals, perhaps often of superior culture, voyaging as bearers of ideas that fired the mind and imagination of native peoples in many lands, changing their customs and spurring them to great achievements.

Having now followed the main streams of Neolithic culture from Anatolia and the Aegean westward, it is time to seek their oriental counterparts. Here, however, the spread will be as much more discontinuous and

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spasmodic as the distances are greater. Furthermore while Europe, and especially western and northern Europe, has been more intensively studied archaeologically than any other region in the world, in much of eastern Europe and Asia the surface of the subject has hardly been scratched.

The first region, and one directly affected by the same Aegean and Balkan sources that lay behind the Danubian diffusion, is the Black Earth country lying between the Carpathians and the Dnieper. This is rich land and in its western parts in the region of the Lower Danube, the Neolithic farmers, with a culture that evidently owed even more to the Vardar-Morava people (p. 242) than did that of the Danubians, were stable cultivators able to maintain permanent villages. In southern Roumania and north-east and southern Bulgaria there are numbers of mounds, or *tells*, marking the sites of these long-lived hamlets. Some, such as the large mound of Karanovo, in Nova Zagra, show a series of occupations all by peasants dependent on mixed farming and living in rectangular houses furnished with clay ovens, querns and sometimes grain storage pits, but with differences, particularly in the pottery, strong enough to suggest the introduction of a new culture. By the time we reach the better known Boian culture, copper was already in use for trinkets. However, essentially it was still a Neolithic economy largely dependent on the cultivation of wheat and millet, though hunting remained an important source of meat. The villagers lived in solid rectangular houses built of split logs. Near neighbours of the Boians, settled in Transylvania and called Oltenians after the river Olt, are best known from their large village of Ërosd. They lived in porched houses of the megaron type (p. 292), furnished with domed clay ovens and their roof gables embellished with ornate finials. They deserve special mention for the magnificence of their painted pottery (p. 332), among the finest of all the painted wares of eastern Europe and south Russia, and indeed among the finest products of Neolithic decorative art. Yet these beautiful spiral ornamented stands, bowls, jars were not the product of professional potters, but seem always to have been made by every family for itself, each working with its own kiln.

This Oltenian was an early forerunner of the much more extensive Tripolye culture, representing a really substantial diffusion of peasants towards the east, where in time they expanded over the plains to the north of the Black Sea to as far as the Dnieper. In this great spread agriculture was shifting and did not allow the villages to be permanently occupied. Nevertheless some were probably lived in for two generations at least, longer than was possible among the Danubians. In fertile country, villages were thickly scattered and the population must have been quite dense. Clay models of Tripolye houses suggest homely interiors (Fig. 36); the living room, sheltered, as in all houses of the megaron plan, by an anteroom or porch, was furnished with a large conical oven, raised hearth and a row of fat jars for storing grain. In one corner lay the saddle quern with its heavy rubbing-stone, and the model shows the Neolithic housewife kneeling at it, busy with

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what must surely have been her most wearisome task—grinding flour for her family.

The Tripolye people in fact grew three varieties of wheat (bread, club and einkorn) as well as barley, millet and rye; they were cattle-breeders and kept some sheep or goats and pigs. Despite this broadly based farming economy, wild game continued to make an important contribution to their diet, hunters coming home with elk, red deer, boar, beaver and duck. This people also netted fish, gathered shell-fish, and even acorns.

They were quite as fine potters as the Oltenians, making a great variety of graceful shapes, often painted in subtle spiral designs to produce a charming combination of black, white and soft reds. Spiral patterns were also incised on the female figurines that show the Tripolye people to have adhered to the usual Neolithic cult of the Mother Goddess.

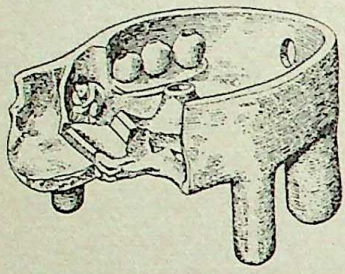

FIG. 36. Neolithic house of Tripolye culture. Pottery model, Popudnia, Ukraine (after Singer).

The Tripolye culture can be taken as the most easterly extension of the primary Neolithic way of life directly inspired from the same sources that gave rise to the Danubian spread to the west. Beyond it in the Pontic region, where the population of the Mesolithic Age had been considerable, the old hunting and fishing economy persisted, so it seems, until influences began to reach it not from the west but directly from the ancient oriental civilizations of Iraq and Persia. A great communal grave on the Sea of Azov and another in central Cis-Caucasia each contained over ten dozen interments, numbers that suggest the support of a food-producing economy, although there is no positive evidence for agriculture or livestock. Grave goods accompanying these mass burials show signs of trade contacts with Iraq, but such contacts become much more obvious in the earliest culture of the Kuban, known mainly from richly furnished graves covered by enormous mounds. It has been said that 'these remarkable tombs may well illustrate the conversion of autochthonous food-gatherers to food production by agents of Oriental civilizations seeking in this metalliferous region copper, gold and silver to satisfy the demand of Mesopotamian cities'. Here again, although farming has been inferred by some authorities, there is no proof of it, and the old economy must still at least have helped to support a people who were buying copper tools and weapons and gold and silver vessels from the Orient, and had chiefs whose state was proclaimed by canopies enriched with gold and silver mounts. Although some authorities hold them to be much later, it is probable that the early Kuban barrows were of much the same age as the great communal burials, having perhaps been raised rather before 2000 BC.

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Related to these Pontic cultures, but undeniably based on farming, was the Fatyanovo culture that first brought grain-growing and stock-raising into the forest zone of central Russia. It is best known in the basin of the Oka and Upper Volga and the surrounding uplands, and it has been supposed that its creators were warlike folk given to cattle-raiding as much as to cattle-raising. Formerly it was believed that this earliest penetration of the Neolithic way of life into the fringes of the vast Eurasiatic forests was inspired from the west by way of central and eastern Europe. A later view is that the Fatyanovo people were pushed up towards central Russia by the pressure of the Tripolye expansion eastward to the Dnieper.[7] Certainly there was at least a trade contact with the Pontic peoples. Whatever the source of the husbandry and other Neolithic elements, there is no doubt that these people were basically descended from the old Mesolithic hunter-fishers and maintained something of their ancient tradition.[8]

This is the moment to make a parenthesis in this survey of the diffusion of the primary Neolithic economy in order to treat an historical matter of prime importance for the later cultural history of the Old World: the origin of the Indo-European peoples. The Fatyanovo people, like the Pontic, lavished skill and labour on the manufacture of beautifully shaped axes that are assumed to have been instruments of war: battle-axes. Similar weapons were made by many other people, including the creators of the early Northern culture (p. 317) who first introduced farming from Poland to Denmark and Sweden. Recently there has been a move to extend the range of the battle-axe cultures by including among them the Michelsberg of Bohemia, Germany and Switzerland, hitherto regarded as belonging to the western Neolithic tradition. By the time of their greatest extent at the beginning of the second millennium they occupied very large areas between the Volga and the North Sea. On no subject have authorities differed so completely or with greater lack of objectivity than on the origins of these cultures. The reason for this partisanship lies in the one thing the authorities are agreed upon—that the battle-axe cultures represent the roots of the Indo-European speaking peoples whose tremendous migrations were to have so great an influence on world history. Thus there have been schools that would make their cradle in northern Europe whence they pressed triumphantly eastward, and schools that would reverse this movement; there is a school that would believe they developed without any migration as a result of the influence of the Danubian farming economy upon hunting societies.

It is not at present possible to come to any final conclusion. It may be that the very recent recognition of an early basic Neolithic culture underlying the local developments of battle-axe cultures from Scandinavia to Poland and perhaps beyond may lead to clearer understanding—and it must be remembered that the present evidence favours the derivation of this basic tradition from the east, perhaps from south Russia. Nevertheless the claim



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of the Danubians to have played some part cannot be ignored. What can be said with some certainty is that the battle-axe peoples had a large ethnic, social and cultural inheritance from the hunter-fishers of the forest cultures such as the Maglemosian and Kunda[9] (p. 97). Whether these primitive folk simply took over a Neolithic economy from their neighbours, or whether they were raised up to it by a ruling class coming from the Pontic or Danubian peoples, this common inheritance gave them a rough kind of unity and a character distinguishing them sharply alike from Danubian, Mediterranean and western Neolithic peoples. Though it may not always or everywhere have been so, this character came in time to be dominantly pastoral, patriarchal, warlike and expansive.

It remains to consider the earliest spread of farming directly eastward from its cradlelands in south-west Asia. In the survey of these lands we went as far to the east as Persian Sialk; north-east from here there are a number of important settlements round the south-east corner of the Caspian Sea (such as Tepe Hissar), Anau in Russian Turkestan and the easternmost site of importance, Namasga Tepe. These small towns and villages date well back into the fourth millennium and probably much beyond. From here farming communities penetrated more or less slowly eastward towards Baluchistan and the Indus region. *Tells* mark their settlements along either side of the central desert, on the north along and beyond the valleys of the Elburz range, on the south through Fars and Makran. There were cultural differences between the northern and southern peoples that still persisted when they converged upon Baluchistan. Here the villages of the farmers clustered thickly on the uplands west of the Indus. At a place near Quetta there is evidence for a pre-pottery Neolithic occupation, and at another in the Zhob valley the earliest encampment seems to have been of a semi-nomadic people with horses, donkeys, humped cattle (zebu) and sheep. But at most sites the finely painted wares made a link between these Indian farmers and those of Iran and Iraq. As might be expected, particularly close relationships exist with eastern Iran, most notably with Hissar.

Nevertheless the local element was strong and shows not only in arts and crafts but also in domestic animals and plants. Although not a great deal is yet known about the species raised by the Indian villagers, the very early appearance of the zebu, a breed long peculiar to India, shows that there must have been a domestication of indigenous beasts. The zebu can be compared with its 'opposite number' the British cattle at the western extremity of primary Neolithic diffusion, with their admixture of the native wild species. There seems no doubt that these upland villages were the source of the great urban cultures of the Indus valley (p. 395) just as several thousand years before and a thousand miles farther west the original villages of cultivators in the hills lay behind the valley civilizations of the Tigris and Euphrates. If many of them were already thriving by 3000 BC, they certainly lasted to have the humble trading connections with Harappā that hill

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communities have usually enjoyed with the wealthier, softer citizens living below them. The upland villages can be recognized as antecedent to the high Indus culture, and we can imagine pioneers from among them who led groups of followers down to settle the wide and jungle-encumbered plain. The ruins of villages and small towns probably founded by struggling colonists of this kind are beginning to be recognized on the Indus plain. One of them, Kot Diji, some twenty-five miles east of Mohenjo-daro itself, with a strongly fortified citadel, is probably typical of these pre-Indus settlements. The ground having been prepared by the adventurous hillmen, some successful, others defeated by flood, by jungle fevers, by the unaccustomed difficulties of irrigation, then the *idea* of advanced, urban, literate civilization, already far advanced in Iraq, could germinate here with such rapidity that it has been possible to say that 'the Indus civilization appears to spring into being fully grown'.

There is little sign of any primary Neolithic cultures in other parts of India than its north-west corner.[10] In general it seems (as has already been suggested, p. 180) that archaic food-gathering cultures with microlithic flints incorporating such generally 'Neolithic' forms as the polished axe last very late indeed.

Knowledge of the spread of the Neolithic way of life eastward beyond India is slight, and anything said about it is likely to be contradicted by future discoveries. It has been thought that Chinese and other far-eastern farming with its rice, beans and pigs was an independent development. In spite of the great natural obstacles to diffusion, and the need for farmers to adapt their routines to a climate of dry winters and wet summers, this does not appear to be true. A trickle of colonists seems gradually to have penetrated every barrier and to have brought the arts of agriculture and stock-raising from south-western to south-eastern Asia. There was probably an extensive diffusion of the new economy during the second half of the third millennium BC. The main cereal crop first cultivated in China was millet, already encountered as a subsidiary to wheat in the west. The history of rice is still obscure, but it is thought originally to have been domesticated in India and to have been carried thence to China by way of the Yangtze, where it would have arrived not earlier than 2000 BC. Wherever its cultivation was adopted, this grain with its immensely heavy yield made possible a far denser peasant population than any other cereal could support.

There are sites which can be described as Neolithic scattered in many regions of China and Manchuria, but their age and affinities are little understood. The most numerous and best-known at present are in the Yellow Earth lands of Kansu, Shensi, Shansi and Honan. This central plain was, indeed, the cradle of Chinese civilization. Here the Ts'i-kia-p'ing culture of Kansu, whose creators made plain, thin strap-handled jars and beakers, may have been in being by the middle of the third millennium, but surer ground is reached with the well-known Yang-shao culture that spread in and around the

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middle course of the Yellow River. These peasants lived in pit-dwellings in villages protected by mud walls, raising millet by hoe cultivation and keeping pigs. At Pan-p'o in Shensi province a Yang-shao village of both round and rectangular houses possessed one large rectangular building which must either have belonged to a chief or have served some communal purpose. Their greatest achievement was magnificent pottery, best seen in their tall-necked fat jars—usually with a red ground enriched with painting. Spiral and checker patterns, and designs derived from the cowrie, as well as many bold curvilinear compositions were all simultaneously popular. Although this painted pottery of the Yang-shao peasants has a character all its own, it is usually assumed to show some indirect relationship with the painted-pottery-making people of south-west Asia. It is interesting to find that there was one highly distinctive pot form, the tripod vessel with legs like pendant breasts, presumably used for mulling an alcoholic drink, that appeared in the earliest Neolithic and survived to be imitated in bronze as the *Hu*, a well-known ceremonial vessel of the Chinese Bronze Age. This culture was flourishing in the third millennium BC, but how much sooner it began is quite uncertain. It lasted until at least 1500 BC. Another Neolithic culture, apparently rather later in date, carried farming into eastern China and particularly into the Shantung Peninsula and the coasts on either side of it. This is the Lung Shan culture whose creators lived in much the same way as those of the Yang-shao, but made a glossy black pottery of distinctive angular forms.

The spread of the primary Neolithic farming economy in the Old World has now been followed to its farthest extent westward, northward and eastward from its sources in south-west Asia and north Africa. In the succeeding Bronze and Iron Ages farming was of course to be spread very much more widely round these primary regions, but many great stretches of country remained in the possession of hunting and food-gathering peoples until modern times. At the point we have reached, and where this chapter must close, about 2000 BC, the enormous tracts of central and northern Eurasia were still inhabited only by scattered tribes of hunter-fishers. They had generally acquired pottery and the use of polished stone axes from Neolithic sources, but maintained their old way of life as wandering hunters, or as more settled fisher-folk. Some of the most highly developed of these people lived in the extreme eastern districts of Amour and Primorie. Here, indeed, a hunting station on the coast by the mouth of the Tetioukhe was a large permanent village with substantial houses and club rooms, and its inhabitants evidently ground grain of some kind as well as importing rich ornaments in chalcedony and jasper from China, Japan and Korea. Indeed this and the Amour region show kinship with the Jomon (comb pottery) culture of Japan, which was also created by prosperous hunter-fishers. A geographical link between the two is provided by Sakhalin island, whose inhabitants at this time had much in common with those of Amour and of Japan. Their culture also shows Eskimoid traits, and it has been suggested that they may be

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racially ancestral to the Eskimo. Similarly, some authorities believe the makers of the Jomon culture to have been the forebears of the Japanese Ainu.

The other main groups of hunter-fishers to have been distinguished are those of the Baikal, probably ancestors of the modern Tungus, the related semi-settled fisher-folk of Yakoutie (some of whom had a naturalistic art), the reindeer hunters of the northern forests, and the fishers of the tundra zone. In western Siberia, particularly round the basin of the Obi, settled fishers living in clusters of large communal houses are considered to be ancestral to the Ugrians. Farming was to be introduced relatively early into this region with the establishment of the copper-using Afanasievo culture at the beginning of the second millennium.

Before leaving these northern territories where harsh conditions and remoteness from the centres of change allowed primitive ways to survive for so long, attention should perhaps be called to the remarkable uniformity of the culture of the vast forest zone stretching across northern Asia and Europe. The forest-dwellers, usually brought together under the name of the comb-pottery people, had a kind of loose unity throughout their range. They form the background to the progressive movements to the south of them as much in Scandinavia, Finland and north-eastern Europe as in northern Russia. Although, as we have seen, there were local groupings and variations due in part to differences of opportunity offered by the environment, there seems to have been trade and an elementary continuity of association between them. It is believed by some historians that there was not only trade between tribe and tribe but an actual percolation of people, perhaps 'traders, warlike adventurers and slaves', and that it was this slow infiltration towards the west that brought Mongoloid stock into north-eastern Europe.[11]

To complete the world picture, something should be said of the origins of a Neolithic way of life in the American continent.

It is possible that the general *idea* of agriculture may have reached the New World from the Old, just as the idea of literate urban civilization reached the Indus valley from Iraq. Even this, however, is by no means a necessary assumption as peoples long skilled in the collection of wild vegetable foods as were the creators of the Palaeo-western cultures (p. 94) may well have taken the step to cultivation independently. Certainly the materials and methods of agriculture had to be independently discovered and invented in America. All the plant species were native, or (in the case of the squashes) naturally introduced by sea currents.

It has been assumed until recently that all cultivation began in the lowland areas of South America where wild pod-corn was to be found as well as manioc, beans and sweet potatoes. New discoveries have modified this opinion. The detection of maize pollen grains in a boring 200 feet below Mexico City shows that wild maize, probably the pod-corn form thought to be the wild ancestor of cultivated *Zea mays*, was growing in the Valley of Mexico during the last interglacial, at least sixty thousand years ago.

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Furthermore tiny cobs representing a form of corn very near the beginning of its cultivation have been excavated from Bat Cave, New Mexico. An associated projectile point suggests they may be contemporary with the Cochise culture, while not quite unambiguous Carbon-14 readings have assigned them a date of about 3600 BC. Even if this age is too great, there can be no doubt that men started to cultivate maize in the south-west of the United States and that it was a very long time ago. In the La Perra cave in Mexico maize dated to about 2500 BC was almost equally primitive but of a distinctive type. Probably, then, maize was separately cultivated in a number of different centres, but it is too soon to say whether the idea itself originated in North, Central or South America. On present evidence South America appears to have the weakest claim.

Although maize was destined to be the most important foodstuff of pre-Columban America, it is unlikely to have been the first to be cultivated. A cave near Ocampo in Mexico has recently yielded cultivated varieties of gourds, lima beans and squashes which have been dated to about 6500 BC. There was certainly pre-maize cultivation in some Andean regions and along the west coast of South America.

Farming peoples seem to have been living along the coast of Peru and Chile by the middle of the third millennium BC. They are best known from middens left in the Chicama and Viru valleys in Peru. Hunting and sea fishing were still important to them, but they also raised squashes, gourds, beans and chiles; maize was unknown among them. They had not mastered potting, but grew cotton and used it for weaving fabrics, nets and bags. Their huts were usually oval, sunk in the ground, lined with cobbles and roofed over at ground-level with rafters of wood or whalebone.

The Andeans at some time also domesticated the llama for pack carrying and meat, the alpaca for wool, and the guinea pig for a tender meat. They had dogs, which indeed must have been introduced quite early in the settlement of the Americas. Neither the llama nor the alpaca was brought to the state of domestication at which it could be milked.

The more important of the South American domestic animals were not kept north of Panama. The Central and North American farmer seems to have possessed only the dog, the turkey—and the bee. Not very much is as yet known of the Neolithic communities who had undoubtedly been farming in Mexico for millennia before the rise of the higher civilizations. The La Perra cave shows that maize was being cultivated as early as the third millennium BC. It is worth noting that while Bat Cave was occupied by some of the most ancient cultivators of the region, the Pueblo Indians were still living there with what might be called a 'painted-pottery Neolithic' culture at the time of the Spanish conquest.

This chapter ends at a date much later than the opening of the second part of the volume. This is because it provides the modest setting for the brilliant lights of civilization with which that part is concerned. Ways of

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life become simpler, our knowledge of them generally more shadowy, as we move outwards from those river valleys where man first created high civilization. It is right at this point to give some recognition to a part of mankind that was to contribute little to the cultural progress to be chronicled in this history, yet who continued to lead human lives sometimes with achievements in arts, crafts and oral literature worthy of high admiration. For all we know, some of them may have greatness still lying in the future.

## NOTES TO CHAPTER VIII

1. Professors Koppers and Pericot García point out that agriculture, and ceramics as well, might have originated independently in America, but this has never been proved. These questions are definitely still open. In this respect R. Heine-Geldern's recent papers indicate the need for care and caution. See R. Heine-Geldern, 'Herkunft und Ausbreitung der Hochkulturen', Oesterreichische Akademie der Wissenschaften, *Almanach*, 105 (1956), pp. 252–67; 'The Origin of Ancient Civilization and Toynbee's Theories', *Diogenes*, 13 (Spring, 1956), pp. 81–99.
2. Professor J. A. Wilson points out that it is increasingly difficult to find informed climatologists or geologists who follow the extremes of climatic determinism of the older archaeologists.
3. For Professor Neustupný the term 'Vardar-Morava Culture' has nowadays been generally superseded by more precise terms such as Starcewo I or II culture, Bubanj culture and Vinča culture; these designate various phases or groups of the Neolithic, which advanced northwards from Greece through the Vardar and Morava valley from approximately 3500 BC onwards. See V. Milojčič, *Chronologie der jüngeren Steinzeit Mittel- und Südosteuropas* (Berlin, 1949).
4. According to C. S. Coon the so-called stone clubs may also be digging-stick weights.
5. During the past few years most scholars have radically changed their views concerning the appearance of the prehistoric lake-dwellings in the Alpine region. The old theory, advanced in 1845 by the Zürich antiquarian Ferdinand Keller, was that they were pile structures built over the water. The problem as it stands today can be put as follows: (1) Are these the remains of 'lake-dwellings' (i.e. settlements constructed over the water), or lakeshore villages on dry land? (2) If the latter is the case, are the individual dwellings ground-level or pile structures? Excavations made at several small Swiss lakes during the past few years show that finds which had formerly been thought to be pile structures can now definitely be identified as remains of lakeshore villages on dry land with ground-level structures (see W. U. Guyan, ed. *Das Pfahlbauproblem* (Basel, 1955)). But for the time being these findings can only be generalized in so far as the old idea of pile construction in the water has to be dropped completely. On the other hand, it is not yet clear whether in view of fluctuations in the water level the individual dwellings in lake villages on the margin of larger lakes were not raised above the ground after all, in order to counter the risk of flooding.
6. Dr P. Bosch-Gimpera stresses that not all scholars are agreed in using 'megalithic' as a collective term for such completely different monuments as, for example, the 'navetas' and 'talayots' on the Balearic Islands, the 'tombe dei giganti' (giants' graves), the Bronze Age 'nuraghe' in Sardinia, and the 'mastabas' in Egypt. It may be that the 'tholos' architecture of the Aegean exercised an influence upon the development of megalith-building in the West, particularly as regards orthostats and false domes. There may also exist affinities between Sicilian tomb-types and artificial rock-cut tombs in Portugal (Palmella).

   But before knowledge of orthostats and false domes spread to the West the megalithic

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architecture found there (dolmens, passage-graves or chambers, and gallery-graves) must have constituted an independent group not influenced by the East. The proponents of this theory, however, are inclined to accept the view that the spread of a Neolithic megalithic religion took place parallel to the spread of peasant agriculture from the Orient. But the ideas that reached the West in this way seem to have produced very different reactions among different European peoples, although it is not easy to trace these from the development of megalithic architecture. From time to time during the Aeneolithic Age the various European peoples apparently maintained close contact with one another, so that certain megalithic forms and techniques spread from the Iberian peninsula across France (especially Brittany) to the British Isles, with offshoots reaching as far as Scandinavia. But there are also more archaic forms of sepulchral architecture dating from the time before such contacts became intensive during the Aeneolithic; their origin and their development in their respective localities are problems that have as yet only been partially solved. Some other problems connected with megalithic architecture should also be mentioned here: e.g. the question raised by G. V. Childe, whether the early megalithic types in northern Europe originally developed independently, and were only reached by the western European influences at a later date; the so-called 'dolmens' in Asia Minor and the Caucasus which bear a resemblance to the large stone cists of later date in the West; and the 'dolmens' in north Africa, which are not really megalithic monuments, but appear to be very late derivatives of the 'bassina' characteristic of this area. Dr Bosch-Gimpera maintains that new excavations at Alemtejo (Portugal) confirm that there is a Megalithic culture of Neolithic age older than the Mesolithic 'tholoi'. In Reguengos de Moseraz 'tholoi' appear as secondary intrusions in the same tumulus of older passage-graves.

7. According to M. Gimbutas ['The Prehistory of Eastern Europe', Peabody Museum, American School of Prehistoric Research, Harvard University, *Bulletin* No. 20 (Cambridge, Mass., 1956)], it is rather a matter of the pressure of the battle-axe peoples that prevented a further expansion of the Tripolye culture; the Fatyanovo culture is regarded as the 'eastern wing' of the battle-axe cultures.

8. Professor G. F. Debetz feels that mention should be made of the mixed farming communities of the ancient tribes of the pit-graves and catacomb cultures in the south Russian steppes. In this connection the Copper Age towns in Armenia are of considerable interest. They have been discovered in many places on Shengavit Hill near Yerevan, on Shresh Blur and Kyul-tapa near Echmiadzin (Vagarshapat). The towns in the lowlands are typical tepes, i.e. mounds growing larger towards the top and formed of wrecked clay dwellings, on the ruins of which new dwellings were erected. Some of them date back to the third millennium BC.

The ruins of round dwellings made of raw brick with quadrangular structures attached have been discovered in Shengavit. In the middle of the dwellings were clay hearths. The floors are sometimes gravelled and covered with brick. Vessels found in these dwellings contained grains of wheat and barley of various species related to the wild species of the Transcaucasus. Bones of domesticated animals and clay figures of cattle testify to the raising of various cattle. Exceedingly original vessels were discovered there—the outside surface black, the inside reddish and highly polished. Sickles with flint blades were used to reap the crops. Most of the tools were made of stone, but copper tools were found, too. Judging from the bones of game animals, hunting played an important part in the economy.

Similar towns have been discovered in other parts of Transcaucasia, in Georgia and Azerbaijan. Clearly the region inhabited by tribes engaged in crop cultivation and stock-raising and already beginning, in the third millennium BC, to use metals cannot, as is so often done, be limited to Mesopotamia, Egypt and the eastern Mediterranean, but must be extended north, east and west of the Caspian Sea. And still farther north, in the steppes of the lower reaches of the Volga and the Don, the inhabitants began to engage in a productive economy—crop cultivation and stock-raising—and soon began to use metals (between 3000 and 2000 BC). Grains of barley, indicating crop cultivation, have been found in the burials of the pit-graves and catacomb cultures which covered a huge region in the eastern section of the south Russian steppes. Pieces of meat (bones

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of cows and sheep or goats) laid beside the dead indicate cattle-raising. Small copper objects, such as four-faceted awls and temporal rings, have been found in some burials of the early pit-graves and catacomb cultures (the pit grave stage).

9. Professor C. A. Nordman rejects the idea that the battle-axe culture was dependent on Maglemose and Kunda, and takes the view that the complex of battle-axe and cord-ornamented pottery cultures came to Europe from the East together with the expansion of the Indo-Europeans. See M. Gimbutas, 'The Prehistory of Eastern Europe', Peabody Museum, American School of Prehistoric Research, Harvard University, *Bulletin* No. 20 (Cambridge, Mass., 1956).

10. Professor H. D. Sankalia notes that recent research has shown that in fact also the entire south-east of the Indian peninsula seems to have been the home of Neolithic cultures. See B. Subbarao, *Stone Age Cultures of Bellary* (Poona, 1948); V. D. Krishnaswami, 'Progress in Prehistory', *Ancient India*, 9 (1953), pp. 53–79.

11. In this connection it is worth drawing attention to the Woodland culture in America and its affinities with the Neolithic in Siberia. See P. Tolstoy, 'Some Amerasian Pottery Traits in North Asian Prehistory', *American Antiquity*, XIX (1953), pp. 25–39.



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CHAPTER IX

# SOCIETY

THE Neolithic peasant's experience of life must have been quite unlike that of his hunting forebears of late Pleistocene times. Probably in many fundamental ways the difference was greater than between the experiences of a modern peasant in, say, the west of Ireland or India, and his Neolithic predecessor. More than to anything else this contrast was due to the domestic and social revolution that went with living in more or less settled homestead, hamlet or village. It might be said that for the individual the revolutionary psychological change was the substitution of routine and hard work for excitement and uncertainty, while the social counterpart was a new stability demanding greater discipline and more government. The hunters' foresight in making tools and setting traps was as nothing when compared with that asked of the peasant when he fed animals in order to have their young and their milk, or kept seed corn for harvest a year later.

It has been shown that the Neolithic way of life was typically one of mixed farming with both agriculture and stock-raising. There are signs here and there, as at Belt Cave, of very primitive herdsmen wandering with flocks of goats; under harsh climatic conditions, as in the Orkney Islands, there were settled cattle-men who raised no crops. Also there were wide variations in the relative importance of crops and livestock and in the extent to which hunting remained a significant part of the economy. Nevertheless, by and large the Neolithic farmer was tied to the land. He had invested his seed corn and must wait for the dividend. On the other hand he could be reasonably certain of enjoying it and of having sufficient food supplies for the winter. It was man's first sacrifice of liberty for the sake of security.

Obviously the new bond with (or bondage to) the soil made its ownership a matter of great social importance. The rather loose forms of possession sufficient for hunting grounds would not do for cultivated fields. Forms of land ownership must always escape archaeological detection, and they have to be inferred from those of present-day primitive farmers and from those that were prevailing when written records began. These comparisons make it appear very likely that arable fields belonged to the village community and might either be worked communally or assigned to individual clans or families for cultivation. If the second custom prevailed, then the fields might be re-allotted each year, or one family's holding might be widely scattered, in order to avoid an unfair distribution of the best land. Pasture was presumably generally held in common, but possibly some peoples may have come nearer to the true nomadic pastoralism and owned their livestock

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communally. Not infrequently among modern peoples all uncultivated land is expressly recognized as belonging to the clan; if it is cleared and worked, it becomes the property of the family responsible but reverts to the clan should the family die out.

It has been said above that land might be assigned to clan or family, and the distinction is an important one. There is good reason to suppose that the family or genealogically related kinship group was strengthened at the expense of the clan by the change to farming. It is probably one of the social changes that came about slowly with the adoption of the new economy. Thus today the owning group is often a small or joint family or other kinship group and not a classificatory clan. On the other hand there are signs that in the past ownership may have been vested in the clan; for example, very often, although the land and its products belong to a family, all other members of the clan are allowed to ask for the use of them and are never refused. This historical change, which seems very likely to have begun with the Neolithic way of life, has been summed up from a study of modern primitives as follows, 'Behind the definite regulations concerning ownership by these smaller [kinship] groups there is often the tradition of ownership by the clan, and it seems probable that there was at one time common ownership by clan or moiety which has been replaced, at any rate in practice, by ownership in which the common rights rest on kinship'.

Such a trend is to be expected, for there is surely something to encourage exclusiveness and sense of possession in hard labour in the closed field, the family hut, just as there is much to encourage collaboration and communal sharing in the hunt and the domestic life of the cave. Irrigation calls for a special kind of common social effort and social control in a farming community. It has been shown that the opportunity offered by their oasis may have helped to raise the people of Jericho to their extraordinarily high level of social development; the channelling and distribution of water was also practised in Persia at Sialk; but generally elaborate irrigation works belong not to the primary Neolithic culture but to civilization.

Family ownership was a very genuine form of communal possession, for quite numerous parents, brothers, sisters, cousins might all have equal claim to the land and its produce. Nevertheless it may have been inclined to lead on to more strictly individual possession for it already points to a much narrower sense of rights and the direct reward of labour (to each according to his deserts) than does any form of clan holding. Individual possession of land is rare among primitives, but there are many instances of particular things such as fruit trees being owned by individuals. A man may not only own a tree on land not in his possession but may even plant one there and hand it on in perpetuity to his children. It has been supposed that this kind of personal ownership has usually arisen when one people has mingled with another, particularly when a patrilineal people has permeated a native

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matrilineal society. If it existed at all in Neolithic times, it is likely to have been due to comparable causes—and for this reason is much more probable for the succeeding phases when infiltration and conquest were taking place in many regions of the Old World.

The trend away from clan ownership is of great significance for it would almost certainly coincide with a weakening of matrilineal inheritance and of women's whole social status. A social anthropologist has written that 'there are facts pointing definitely to the close connexion between communal ownership and mother-right on the one hand, and individual ownership and father-right on the other hand'. Now it has already been said that traces of matrilineal descent and even of matriarchy survive in the forms of Egyptian and Cretan civilization, but in general the growth of urban life everywhere brought it to an end. Again, outside the early centres of urban life it was probably extensively reduced by the early Bronze Age upheavals just referred to and may also have been weakened when land came to be in short supply. But there is every reason to suppose that under the conditions of the primary Neolithic way of life mother-right and the clan system were still dominant, and land would generally have descended through the female line. Indeed, it is tempting to be convinced that the earliest Neolithic societies throughout their range in time and space gave woman the highest status she has ever known. The way of life and its values, the skills demanded, were ideally suited to her.

Whether, where it persisted, the clan system was still totemic it is impossible to judge. Totemism is found among primitive farmers today, and it is possible to interpret the nomes and the related animal cults of Dynastic Egypt as survivals of a prehistoric totemism. Yet there is less positive evidence for its existence among Neolithic peoples than for their hunting forebears. We may guess that the system of social organization outlasted the religious inspiration of totemism—an inspiration likely to be deadened by the settled life of field and village.

Possessions other than land can be assumed to have belonged to the small family unit or to individuals. It is true that among modern primitives things made by communal effort, such, for example, as canoes, sometimes remain as common possessions. But even this is by no means universally true. Houses, often built by a group, normally belong exclusively to the occupants, and it seems reasonably certain that the small village houses of the various forms that we have seen spreading through the Old World with the expansion of the Neolithic economy were the property of the families who lived in them. On the other hand we have seen how here and there large communal houses were still preferred.

As for the small possessions now becoming so much more abundant, they must have been individually owned. Not only weapons, tools and ornaments, but also all the attractive products of the new crafts of potting and weaving would surely have been the absolute and treasured property of the men, women and children who made or were given them. With greater skills, more

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leisure and a settled home, a mild acquisitiveness could now take its place among human desires.

Life in villages and little towns must have brought to birth a feeling of neighbourliness. Just because the privately owned and occupied house gave families a conscious apartness, it also gave a sense of being neighbours impossible to a hunting community that lived so much as a single group. In large villages and small towns such as those of pre-Dynastic Egypt and south-east Asia and even here and there in Neolithic Europe, there must have been some faint beginning of the life of the streets, of going out to see who was about and forgathering for talk at recognized popular meeting places. Presumably the sun must have made as much difference to social habits as it does today. The peoples who carried farming to the chillier, wetter parts of Europe and Asia must have had to pass far more time in their houses than did the more fortunate villagers in its warm cradlelands.

The primary Neolithic way of life seems generally to have been a peaceful one not given to warlike adventure. None of the Danubian villages, for instance, had defences, and although in many regions Neolithic settlements were ditched and fenced, it was usually on a scale more appropriate to protection against marauding animals than against human enemies. The walls and tower at Jericho, on the other hand, show that exceptional wealth in a countryside where there were many less settled peoples already in very early times led to the defence of the rich town-dweller against the poor, hardy raider so familiar in historic times.

The general absence of weapons of war among the grave furniture of Neolithic burials provides even more convincing proof of the absence of martial ideals in the hearts of the new peasantry. A striking contrast is provided in Late Neolithic and Early Bronze Age times when from the Caspian and the Russian steppes to Scandinavia and Britain, battle-axes, daggers and other arms appear in the grave of every adult male. Although it is rash to push economic explanations too far—many peoples have loved to fight their neighbours without any need for *Lebensraum*—it seems probable that the fact that good land was to be had for the taking and each succeeding generation could find a good living did partly account for the peacefulness of early Neolithic communities. And similarly that the more warlike ideals of the succeeding phase were partly due to mounting populations and the shortage of new land to feed them.

The Neolithic economy demanded greater specialization of labours and skills than had existed in hunting societies. But it was still slight in the primary Neolithic phase, increasing only with the approach of urban conditions. It consisted chiefly in a sharpening of the division of tasks between the sexes. It is generally accepted that owing to her ancient role as the gatherer of vegetable foods, woman was responsible for the invention and development of agriculture. Modern analogies indicate that so long as the ground was prepared by hoeing and not by ploughing, woman remained the cultivator.

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She probably also invented potting, spinning and weaving and kept these crafts in her hands.[1] The men's main preoccupation must have been with raising and managing the livestock, and among societies where it remained an important source of food, with hunting. It seems probable that they would also have undertaken the labour of grinding stone axes, hoes and other heavy tools. When virgin land was being opened up, tree-felling made strenuous work that presumably fell to the men, while they may also have been the carpenters where such existed.

There is practically no evidence for full-time specialists in ordinary village life. Every family seems to have undertaken all forms of labour and craftwork for itself. Even in cultures where the finest painted pottery was made, each household may have been capable of making its own (p. 304). Probably individuals gifted in particular crafts were occasionally employed by their neighbours and paid for their trouble in grain or other food, but full-time craftsmen seem to have emerged only with an urban economy.

There may, however, have been a few specialized workers outside the village community. In several parts of western Europe, for instance, flint mining and stone quarrying to get raw materials for the manufacture of axes were carried out in a remarkably elaborate fashion, and it has always been held probable that the followers of so strange and even uncanny an occupation may have formed special groups—as blacksmiths did until recently among some African peoples. Perhaps, too, there may have been odd individuals who specialized in trade, going from one community to another with shells or other sought-after raw materials, usually decorative stuff for personal ornaments. There is, however, no real evidence for the existence of such itinerant pedlars—goods such as the spondylus may well have been traded from village to adjacent village over great distances.

Another quite different type of division of function has to be considered. That is the purchase of wild game or raw materials by farming peoples from hunters surviving in their neighbourhood. This state of affairs with cultivators and food-gatherers living intermingled is fairly common today and was probably far more frequent in prehistoric times than is generally supposed—for it can only be detected where archaeological method is far advanced. It is known that the Ertebølle people of Mesolithic tradition flourished for a considerable time after the arrival of the earliest farmers in Scandinavia, and the contacts known to have existed between them may well have included an exchange of corn for fish and wild fowl. In Britain there seems to have been a comparable survival of hunting folk (though their culture may have been more profoundly affected by the newcomers), and there is evidence to suggest that they may have been in part responsible for a carrying trade in flint and stone axes. That peoples maintaining a more nomadic way of life should sometimes have acted as carriers between settled communities seems likely enough, and may have been widespread.

Neolithic villagers certainly did acquire luxury objects from afar, and some-

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times more basic raw materials from outside their own immediate countryside. Yet fundamentally the Neolithic economy is characterized by small, self-sufficient communities. All the pioneering groups whose diffusion through the Old World was described in Chapter VIII could have lived their lives without any contact with the outside world. From Britain to Kansu, from the Obi to the Upper Nile, in excessive heat and cold, in arid lands and in lands where there was too much rain, the Neolithic farmers in their hamlets and villages adapted themselves to the local environment and used it as fully as they could. Generally the original settlers brought their livestock and seed corn with them (although even here we have seen how local species were sometimes domesticated or hybridized), but in most other ways their culture became closely keyed to local conditions and opportunities. That is why, apart from the basic similarity of the economy, there is such a vast number of small pieces in the mosaic of Neolithic cultures—far more than of the relatively large blocks to be distinguished in the Palaeolithic Age. A peaceful sedentary life combined with isolation leads inevitably to a multiplication of local cultures.

Forms of leadership and authority among Neolithic communities are almost as difficult to infer from archaeological evidence as are forms of ownership. It is obvious enough, however, that the possession of land, livestock and greatly increased domestic equipment would lead to more disputes and a need for greater social control. Where irrigation was practised, this need would be increased still further: disputes about water are among the oldest causes of ligitation. On the other hand the various kinds of communal property-holding that we have supposed to have been general in Neolithic times are less likely to give rise to trouble than private ownership.

We can be sure that the concept of law, as opposed to custom, had not yet been consciously formulated. All that was said in Chapter V about the force of tabu, crimes against the spirits and their punishment is equally applicable to the new society. In more than one modern primitive society the private ownership of trees on common land is protected by special tabus. When disputes about land and other evidently secular matters had to be settled they probably came before councils—perhaps of the whole village, perhaps of recognized elders. Decision would probably be reached by the indefinable but readily comprehensible means of 'common consent'. It has been said of their counterparts among modern primitives, 'In these councils there are none of the formal means of reaching decisions by voting or other means which are customary among ourselves. At a certain stage of the discussion it seems to be recognized by some sort of common sense . . . that the group has reached agreement. The conclusion which has been reached is intuitively known to all, and the meeting passes on to the next business. There is . . . a group sentiment which makes unnecessary any definite social machinery for the exertion of authority. . . .'

The fact that in true primary Neolithic cultures there are almost never any

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large houses or richly furnished burials of chiefly kind is fairly strong evidence in favour of this kind of communal government. In an agricultural society the authority of elders with their experience and knowledge of custom and lore is perhaps likely to have been greater than among hunting peoples where physical prowess counted for so much. Probably, too, there were more elders to offer their counsel—for the expectation of life, though still brief by present standards, was certainly greater than in Palaeolithic times.

While government by custom, council and common consent seems perfectly appropriate to the type of community represented, for example, by the Danubians, the Swiss lake-dwellers, the people of Jarmo or the pig-keepers of the Yellow River and many other societies between these geographical extremes, archaeological evidence suggests that it was not universal. The extravagantly rich burials of the Kuban (p. 252) with their vessels of gold and silver, their ornamental canopies, evidently belonged to barbarous chieftains. But then as we have seen this Pontic culture was not of the true primary Neolithic type, but engendered by the direct influence of high civilization on a hunting society. But we must also allow for the beginning of forms of chieftainship among true Neolithic communities that were becoming socially more complex as part of their advance towards civilization. It will be recalled that at El Omari in Lower Egypt, a village seemingly belonging to the Neolithic Merimde culture, a man had been buried with a carved wooden baton comparable to the Ames sceptre, included in the royal insignia of Lower Egypt. Perhaps a chief of this kind may have ruled over a group of villages. An anthropologist has described a modern African society as follows, 'The social organization is essentially that of a number of villages united into a single community under a common chief. . . . But throughout this form of political grouping it is generally possible to discover a unifying influence arising from a sense of kinship and therefore the possession of a common religious cult. . . .' This was quoted and commented upon by an Egyptologist as follows: 'How well this description fits predynastic Egypt becomes clear when we view the modesty of the remains of predynastic villages; the homogeneity of the contents of thousands of predynastic graves; the division of Egypt, in later times, into nomes or provinces which go back, in the main, to communities formed in early times; the ease with which these provinces became independent under their own local chiefs whenever the central power weakened; their representation by standards or emblems connected with a local cult. . . . There can be no doubt that our quotation from modern conditions applies fully to those prevailing before the time of Menes.'*

This, then, may be the kind of structure that began to be established in Neolithic society in regions that were advancing towards civilization. As they must to some extent have been prototypes of the divine rulers of Dynastic times, it can be assumed that these chiefs of prehistoric village groups, or nomes, would have been sacred rather than secular rulers. Almost certainly,

* H. Frankfort in *Kingship and the Gods* quoting C. G. Seligman in *The Races of Africa*.

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too, although the chiefs themselves were men, inheritance would pass through the female line, as it is known to have done for the chiefs of the nomes in historic times. Indeed, matrilineal descent was prevalent throughout Egyptian society, and manifested itself in a peculiar form in the marriage of Pharaoh to his sister as the heiress to the kingdom, or at least to the sacred throne.

The existence of priests and priestesses among the leaders of Neolithic communities is as difficult to demonstrate archaeologically as other social forms. In the simplest societies of the primary Neolithic diffusion and those that remained at this stage of social evolution, what was said (p. 126) of Palaeolithic shamans and medicine men would probably still be applicable. There is no longer, however, any reason to connect such individuals with the practice of an inspired magico-religious art. At higher levels of social development such as we have been considering in the Merimdians, and such as are vouched for by the temples at Jericho and Eridu, more clearly defined priesthoods would probably be emerging in relation with divine, or divinely inspired, rulers. That there would have been female as well as male priesthoods seems sure enough. They emerge with history in Egypt and Crete; they must surely have been pre-eminent in Malta with its tremendous obsession with the Great Mother. Groups of priestesses, some attendant on the Moon Goddess, others on the Maize Mother, appear to go back far into pre-Inca times in South America.

At humbler levels of Neolithic society, the cultures that incorporated the building of megalithic tombs have a peculiar interest. It has been shown (p. 250) that this form of architecture and its attendant cult were probably spread by missionaries who must have acquired special power within the local communities. If this interpretation is a correct one, then all the far-flung western coastal peoples who adopted these religious forms must have had sacred leaders with at least enough social power to inspire the expenditure of unprecedented labour. How much purely secular authority would have fallen to them cannot even be guessed. Indeed there is no agreement as to whether the great tombs themselves, used for successive burials over considerable periods of time, were truly communal in the sense that they were used for all the dead of the community, or whether burial in them was the privilege of a ruling line. Here and there a close family likeness has been detected between all the bodies interred—and in western and northern Europe the numbers are not usually very great. These facts argue in favour of megalithic tombs standing for the persistence of a sacred chieftainship of some kind. On the other hand in some regions, notably Sicily, vast numbers of people were buried in them, suggesting a genuinely communal rite.

If the social implications of megalithic architecture demand special discussion, so also do those of certain exceptional sites, notably Jericho. There seems no doubt at all that this close-packed eight-acre town behind strong defences and furnished with a temple must have had the social structure of true urban civilization. That is to say there are quite likely to have been specialists not

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normally engaged in food production, even more surely an organized administration probably with a ruler and priests. Yet this was some nine thousand years ago and before the adoption of the potter's craft. It has already been admitted that it is too soon to see Jericho in historical perspective in relation to the growth of urban life in the river valleys. In purely social history it has a clear meaning for us here. It emphasizes what is already apparent: that the forms of social organization we have been discussing are very much a matter of stages of development, fluctuating freely with the chances of local environment and of historical contacts. In exceptional circumstances such as those offered by the perennial spring at Jericho (now watering seventy thousand Arab refugees in addition to the native inhabitants) a community could be readily stimulated into creating a social organization far in advance of what was generally prevalent even in that very progressive region of the world.

Though Jericho had unique architectural features, subsequent discoveries are beginning to show that other settlements only a little less ancient were as large or even larger. Catal Hüyük in southern Anatolia, flourishing in the seventh millennium BC, covered twice the area of the later pre-pottery Jericho, while at its height Khirokitia in Cyprus is thought to have contained nearly a thousand houses.

This survey of the social aspects of the Neolithic way of life as it spread from its ancient centres between eight and four thousand years ago is largely based on supposition and inference, yet results in a consistent overall picture. The common basis was formed by varieties of village or group communism with appropriate forms of customary government by village council or groups of elders. The clan organization surviving from earlier times was probably gradually weakened in favour of kinship groups. Here and there as in the Pontic lands or in regions affected by religious missionaries, special forms of chieftainship and divine leadership may have been established. In south-west Asia and the Nile valley before the end of their Neolithic phase, village communities began to develop towards the great theocracies that were to emerge in Dynastic times. They need not, however, have gone very far towards it, for the old systems must have been profoundly altered by the conquests and the imposition of hegemonies that had to take place before civilized states were formed. These events, equally with the greater specialization of crafts and professions, caused the formation of the complex, stratified societies of the Bronze Age civilizations. Even in regions beyond these civilizations similar events, due to growing land shortage and the migrations of warlike peoples, led to other forms of stratified society, far more barbaric but also in strong contrast with the simple social structure characteristic of Neolithic life.

## NOTE TO CHAPTER IX

1. Professor R. M. Berndt feels that the womenfolk *may* have largely been involved in the discovery and development of agriculture, pottery, weaving, etc., although there is no concrete evidence that this is so.

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CHAPTER X

# FARMING

It has been made abundantly clear that the typical Neolithic economy rested on mixed farming with both agriculture and stock-raising. The relative importance might vary from one type of country to another and one cultural tradition to another, but generally speaking a fairly even balance was maintained. Because the cultivation of plants had a stronger effect on the way of life (by tying man to the soil) this subject can be granted first place.

## CULTIVATION OF PLANTS

Although some consideration will have to be given to other plants early cultivated by man, cereal crops are of quite overwhelming economic importance in both the Old World and the New.[1] Wheat, barley and millet in Asia, Africa and Europe, maize in the Americas, made the solid foundation for the agriculture of our Neolithic forebears.[2] A general sketch of the spread of farmers and their crops has been drawn in Chapter VIII, but it remains to give a more detailed picture of the origin and distribution of the various botanical species involved. Precise facts about the first steps in the cultivation of the wild ancestors of the cereals are still very few, but their subsequent agricultural history is sufficiently well established.

One very significant difference between the ancestral wild grasses (and it is true also of quite other plants, such as beans) and the man-bred forms is that the former shed their seeds as soon as they are ripe. When, then, women were gathering wild seeds they had to beat them into skins or baskets and were liable to lose a large part of the yield. True reaping could only be invented after this natural method of propagation had been checked by selective sowing. 'Now and then a wild plant puts forth a suicidal mutation in which its head or pod lacks the ability to open. Ordinarily such a plant eventually falls and its seed rots. However, if a human being gathers it and opens its head or pod artificially, he can sow the seed next season and the mutation survives.' He, or rather she, can then reap the field with a sickle without loss, and take her time over threshing and winnowing.

It is likely that there were many centuries during which the food-gatherers of Mesolithic tradition were trying out different species, before the crops on which so much of the future history of mankind was to depend became selected, improved and stabilized. Who at that time could say which was certain to be a domestic plant, which a 'weed'? Even at a much later date, rye, which had been carried as a weed in soft wheat, mutated, was cultivated,

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and soon began to be extensively grown in the northern latitudes where wheat could not thrive. We have absolutely no tangible evidence for this period of tentative transition. But ears of wheat found at Jarmo in the Old World and cobs of maize at Bat Cave in the New were alike at a primitive and as yet unstabilized stage of development.

It is a rather surprising fact that throughout the early centres of cultivation in the Old World wheat and barley are almost invariably found together; no Neolithic culture is known to have been based on one alone. At that stage, however, wheat seems usually to have been the more important of the two.

*Wheat*

The cultivated wheats fall into three groups: the diploid, represented by einkorn or small spelt; the tetraploid, by emmer, macaroni and rivet; and the hexaploid represented by the bread and club wheats and by spelt. This classification based on chromosome structure is cut across by another division: einkorn, emmer and spelt are all glume wheats in which the grains are not released from their covering by threshing, while the other varieties are all naked wheats in which the grain is readily released from the glume.

Emmer (*Triticum dicoccum*) has been found more abundantly than any other wheat on all ancient sites (with the exception of some Danubian villages) from Egypt to Britain and Scandinavia. All the great wheat deposits to have been preserved in Egypt from Neolithic to Roman times are of this species. Emmer is remarkably like its wild ancestor, now known to be *T. dicoccoides*, which grows wild from Syria and Palestine to Iraq and Persia. The discovery that this was undoubtedly the ancestral form has finally disproved one theory that would make Abyssinia the home of emmer wheat. The wheat found at Jarmo and dating from about 5000 BC is of very irregular type, some ears being coarse and loose (comparable to *T. dicoccoides*) while others are compact and already close to the fully cultivated form of emmer. As the wild grass is at home in relatively high country, it is possible that bringing it to lower levels for field cultivation helped to cause rapid mutation. From its homelands in south-west Asia this wheat seems to have been diffused along two routes, dividing at the eastern end of the Mediterranean; one took it southward into Egypt, the other into Europe, where it was grown by the Danubians, the Swiss lake-dwellers, the Windmill Hill people of Britain and the first farmers of Scandinavia. Indeed, in the conditions offered by the sub-boreal climate it was able to do better in these northern lands than it would today.

No wild form of hexaploid wheat is known, and it is thought that bread wheat (*T. vulgare*) and club wheat (*T. compactum*) came into being as mutational changes from emmer—changes that may have taken place in the Transcaucasian region. An alternative theory sees the hexaploids as the result of hybridization between emmer and einkorn, among which they often occur

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sporadically. No Neolithic culture is known to have relied principally on these naked wheats, but *T. compactum* is known from El Omari in Egypt, on Danubian sites and in Denmark; it was rather more freely grown in later Neolithic times by the Swiss lakeside-dwellers, spread widely during the Bronze Age and largely took the place of emmer during the Iron Age. It was grown in historic times in the Indus valley at Harappā. Spelt and bread wheat were hardly established before the Bronze and Iron Ages respectively.

Of all the cultivated wheats, only einkorn (*T. monococcum*) is unrelated to the wild *T. dicoccoides* and instead is descended from *T. aegilopoides*, wild varieties of which are at home in the Balkans and (another group) from Asia Minor to Palestine and Persia. It owes its name to the characteristic of having only one grain instead of two in each spikelet. Einkorn is not abundant at any of the really early sites in south-west Asia though it occurs occasionally, even at Jarmo. It evidently often grew as a weed in fields of emmer. Curiously enough it was very popular with the early Danubians who grew more of it than they did of emmer; this may have been due to a traditional preference deriving from the Balkans and Asia Minor where the European Danubian culture was rooted.

*Barley*

There are two principal kinds of cultivated barley, the two-row (*Hordeum distichum*) and the six-row. The latter is further subdivided into a dense-eared variety with hexagonal cross-section (*H. hexastichum*) and a lax-eared with rectangular cross-section (*H. tetrastichum*) sometimes known as four-row barley. All these forms occur with either glumes or naked grains.

The wild ancestor of two-row barley (*H. spontaneum*) is a native of Palestine, Arabia, Asia Minor, Transcaucasia, Persia and Afghanistan; of recent years a wild six-row species (*H. agriocrithon*) has been identified in eastern Tibet, and it is now generally held that the two barleys came from these two centres, one in western and the other in eastern Asia.

The very earliest find of barley is, like that of wheat, from Jarmo. It is of the two-row variety and, again like the emmer, is evidently intermediate between the wild form, *H. spontaneum*, and the cultivated, and proves the direct relationship between them. Two-row in the fully cultivated state was also found at the early Neolithic site of Matarrah, at Halaf and Anau, and in Egypt in the Fayum. It also reached Switzerland in Neolithic times. This western spread of the *H. distichum* and its absence in the Far East is to be expected. So is a fairly early evolutionary development of six-row in China. What is more surprising is to find an extensive cultivation of six-row, particularly the dense-eared variety, in Neolithic Europe. The lax-eared variety turns up at the Fayum and at Badarian sites in Egypt. If, then, the six-row barley really originated far to the east, it was very much more successful in colonizing the west than two-row was in extending its range eastward.

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*Millet*

The millets include plants belonging to different genera of which the most important in early times were true millet or panic grass (*Panicum miliaceum*) and the Italian millet (*Setaria italica*). Panic grass was early cultivated in India and central Asia and formed the basis of the economy of the early Chinese farmers. It seems to have spread westward by way of the Ukraine, Thrace and the Danube to Switzerland, Germany and France. Italian *Setaria* is a descendant of *S. viridis* that grows wild in western Asia, along the Mediterranean and in other parts of Europe. It is a moderate-warmth-loving species. Indeed, the millets, now largely displaced in temperate lands by wheats and barleys, are still of great importance in tropical countries where wheat will not thrive.

*Rye and Oats*

During Neolithic times these cereals were present in the fields, if at all, only as weeds. Their cultivation was not of economic importance much before the last millennium BC.

*Maize*

The origins and early history of maize have been studied so intensively of late that opinions have been rapidly changing. One basic conviction which has survived all attempts to challenge it is that this most productive cereal originated in the Americas and was not known in the Old World in pre-Columban times.

The view which has been most clearly and consistently developed and which has gained most support from recent archaeological and palaeo-botanical discoveries is that maize developed from a wild ancestor which was at once a popcorn (hard-seeded) and a pod-corn—in which each kernel is enclosed in its own glumes or chaff. In the fully evolved maize (*Zea mays*) there are no glumes, the kernels being attached to a rigid cob and enclosed in a tight-fitting leaf-sheath or shuck. Such a form could never survive in nature as (a boon to the farmer) the seeds are non-dispersable and can only be sown artificially. In the primitive pod-corn the seed probably grew on slender rachises (in place of cobs) which easily broke when shaken by wind or by birds, so scattering the seed (Fig. 37 A and B).

Endorsement of the view that the wild ancestor was a maize and not, as others have argued, teosinte (*Zea mexicana*) or *Tripsacum* was provided by the discovery two hundred feet below Mexico City, in a geological context dating it to at least sixty thousand years ago, of unmistakable maize pollen grains. That it was also of pod-corn type is supported archaeologically—both by the finding of ancient and primitive cobs and by portrayal in prehistoric ceramics. The cobs found in the oldest level in Bat Cave, New Mexico, and a little uncertainly dated by Carbon-14 to about 3600 BC, certainly had the

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glumes and fragile rachis of the supposed primitive pod-corn. The same is true of the second most ancient specimens, the cobs from La Perra Cave, Tamaulipas, Mexico, which are some one thousand years more recent. As for ceramic evidence, various pots from Central and South America, particularly a funerary urn with a maize god from the Mexican Zapotec culture,

[*Courtesy of Dr Paul C. Mangelsdorf, Harvard University.*

FIG. 37A. The development of maize in America.

Evolution of the maize plant: (*a*) wild pod-popcorn; (*b*), (*c*) improved by cultivation; (*d*) after loss of pod-corn gene; (*e*) increased distance of male flower; (*f*) modern dent corn from the US corn belt.

look very much like pod-corn. The Zapotec specimen also tends to confirm an interesting result obtained by a most ingenious method of regressive selective breeding. This breeding back towards the primitive suggested that in the early form the male flower, which in modern maize grows separately at the top of the stem, was immediately above the female flower and therefore the ear. The ear held by the Zapotec god is crowned with plumes like a helmet. Almost certainly they represent the plumy male flower. This having been observed, re-examination of the Bat Cave cobs showed them to be topped by stumps which can only be the base of the male spike.

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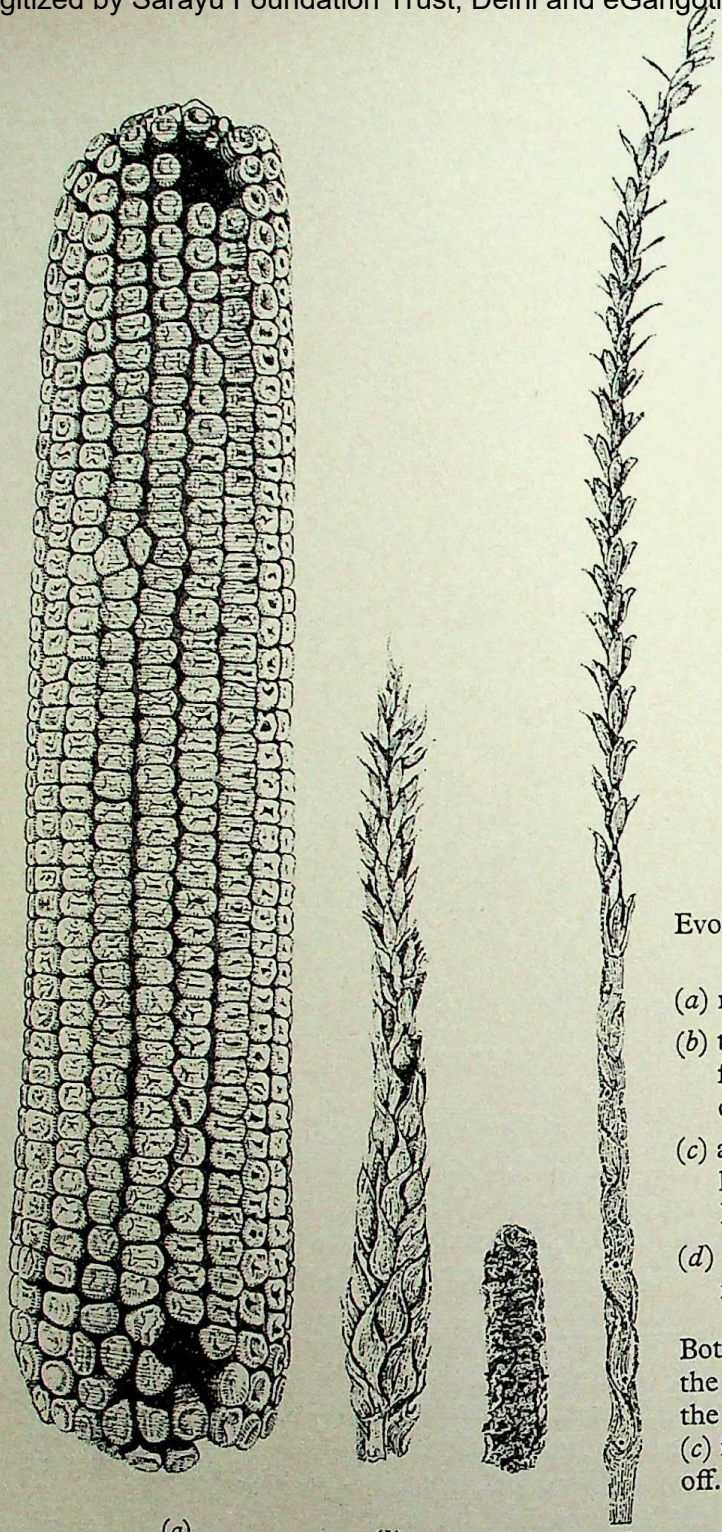


Evolution of the maize cob.

(*a*) modern dent corn.

(*b*) the ancestral form of pod-pop-corn.

(*c*) an actual pre-historic cob from La Perra Cave.

(*d*) *Tripsacum*, a wild relative of corn

Both (*b*) and (*d*) show the adjacent spike of the male flower. On (*c*) it has been broken off.

[*Courtesy of Dr Paul C. Mangelsdorf, Harvard University.*

FIG. 37B. The development of maize in America.

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The view that *Zea mays* is descended from a wild maize of pod-corn type, is, then, seemingly confirmed from many directions. With it is associated the further belief that teosinte, so far from being the ancestor of maize, was in fact the result of a natural hybridization between an already cultivated maize and *Tripsacum*. On the other hand after this hybridization maize seems often to have recrossed with its offspring, so that probably nearly all the many modern variations of corn contain an element of teosinte. In favour of this interpretation is the fact that in the borings below Mexico City while both maize and *Tripsacum* pollen occurred at two hundred feet, teosinte appeared only in the superficial deposits. Again, at Bat Cave, while the tiny primitive pods from the oldest occupation appear to be a pure *Zea mays* strain, in higher levels there is a conspicuous teosinte element. Where and when did the cultivation of maize begin? Until recently it was assumed that the wild ancestor was a native of the South American lowlands (where varieties of pod-corn still flourish) and that it was first fully cultivated in the Andes. Bat Cave, however, has very much shaken this opinion: the oldest cobs there, about the size of a woman's finger-nail, are undoubtedly very primitive and probably near the beginning stages of cultivation. If the Carbon-14 date of 3600 BC is correct—and it is not unambiguous—this is the most ancient corn known. The Mexican La Perra cobs are also primitive but they differ from those of the North American site in several botanical features. Although no such early specimens have as yet been found in the Andean highlands their absence cannot be held to dismiss the earlier arguments in favour of a South American origin. The most likely interpretation is that here again we can think of an *idea* spreading and being developed more or less independently in separate centres. It is too soon as yet to say whether South, Central or the south-west of North America can claim to have taken the lead.

### *Root Vegetables*

Wild roots had long formed an important element in human diet, but their early cultivation is exceedingly difficult to trace. The only one to have been detected in a Neolithic context is the carrot, known from Switzerland and Germany. As it is descended from the hybridization of two wild species *Daucus carota* and *Daucus maxima* it must have originated in the region where the natural ranges of these overlap: the Mediterranean. Radishes were intensively cultivated in Old Kingdom Egypt and must have been eaten there in prehistoric times.

### *Fruit, Nut and Oil-seed-bearing Trees*

Like roots, wild fruits have always been gathered by men—although, indeed, they were of even greater importance to his tree-dwelling ancestors. Cultivation, however, did not rapidly produce fruits that can be distinguished from their wild forms, so that the early history of orchard-culture cannot

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easily be followed. The apples eaten by the Danubians were small crabs of a kind that grows wild in Germany. In some of the later Neolithic Swiss lake-villages the inhabitants seem to have enjoyed a larger apple, probably derived from the cultivation of another European wild crab, *Malus sylvestris*. Pears were also eaten by these villagers, together with little plums, and cherries—possibly wild ones. It is thought (without sufficient evidence for proof) that the Danubians brought the cherry-plum into central Europe where it became crossed with the sloe, producing the stock of the cultivated plum.

Walnuts grew wild as forest trees from Greece through Asia Minor, Persia and the Himalayas to China, and the nuts were doubtless harvested. They have been found in a Neolithic context only in Europe, where their shells survive in some of the later lake-dwellings of Switzerland and Germany; as the tree does not naturally grow north of the Alps, it looks as though it must have been brought in and cultivated by the lake-dwellers. Pistachio nuts, still so popular in the Middle East, were already enjoyed at Jarmo.

It has already been recorded (p. 245) that the first known instance of the cultivation of the olive was among the Neolithic people of El Garcel in south-east Spain. The origins of this tree, now so important in the economy of southern Europe, are uncertain; they may be Asiatic, and be traced to the wild species, *Olea chrysophylla*, which is native south of the Sahara, in Afghanistan, Baluchistan and western India. In early historic times it was certainly being grown at the eastern end of the Mediterranean, for the oil was imported into the Egyptian Old Kingdom from Palestine and Syria. It was probably never of importance in either Iraq or the Indus region, for here by historic times sesame was the usual source of oil.

Beans, peas and other leguminous seeds have been an invaluable stand-by as a human food. They are easily dried and stored and have a high protein content. The field pea, and by mutation the garden species, are probably derived from the wild *Pisum elatius* that grows across the Old World from the Mediterranean to Tibet. Peas and lentils were eaten at Jarmo. Wild peas have been found among the grain at Merimde (p. 234), but this vegetable does not seem to have been much cultivated in Egypt. It was, however, cultivated by the Danubians who brought it into central Europe; before the end of Neolithic times it was being grown in Switzerland and southern Germany. Beans were of immense importance to ancient man in the Americas where meat was scarce or absent. In fact several of our present-day garden beans have an American ancestry. Different wild species were cultivated in the Andean region on the one hand and the central American on the other. The tepary bean (*Phaseolus acutifolius*) of Mexico is unknown in the south, while the Mexican lima bean (*Phaseolus microsperma*) is a distinct variety. Both *Phaseolus vulgaris* and *Phaseolus multiflorus* are common to both regions, but the important yellow waxy types are peculiar to the south.

There is no archaeological evidence of the first cultivation of the soya (*Glycine max*) of such immense dietetic importance in China and Japan,

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nor of the Indian grams (*Phaseolus mungo* and *Phaseolus aureus*). In prehistoric Europe the usual variety was the broad bean (*Vicia faba*) which appears to have been introduced along two lines of diffusion. It is thought to have been derived from a wild bean native to north Africa (*Vicia pliniana*). It is therefore not surprising to find it introduced into Spain during the Neolithic period; its cultivation spread rapidly northward to the Channel Islands and south-east France. In addition to this southern line of entry direct from Africa, the broad bean was also carried into Europe by the earliest Danubians—which suggests that it was possibly already being cultivated in the Balkans and Asia Minor.

*Squashes and Gourds*

Though they formed a much less vital element in the diet of the early American cultivators than either maize or beans, squashes were extensively cultivated among them. As with the beans, there is a sharp division of species between the Andean varieties and those cultivated farther north. In Peru the squash most favoured was *Cucurbita maxima*, which was unknown in the Central American-Mexican region, while the reverse is true of *Cucurbita mixta*.

The bottle gourd (*Lagenaria siceraria*) has two distinctions. It is the only plant cultivated exclusively for making vessels and the only plant of any importance to link the cultivators of the Old and New Worlds in pre-Columban days. It was undoubtedly a native of the tropical regions of the Old World and was carried to America by ocean currents.

Comment has already been made on the fact that its imitation in pottery by the Danubians of Hungary in a region where it cannot grow is evidence of the southern, and particularly Anatolian, inspiration of their culture.

*Flax*

Varieties of flax were early grown both for their oil-seeds and for fibre. The Neolithic Egyptians grew *Linum usitatissimum* (Badaria and Fayum), and it has been found at Alishar in central Anatolia at a level dating from about 3000 BC. Various species of *Linum* are natives of Europe, and doubtless provided the source of the ancient cultivated form *Linum bienne*. This plant was grown by the Danubians in south-eastern Europe, and they probably stimulated its spread to the west and north; it was cultivated by the earliest inhabitants of Swiss lake-dwellings and had reached Scandinavia before the end of Neolithic times.

## THE DOMESTICATION OF ANIMALS

How the first stages of the domestication of wild goats, sheep, cattle and pigs were achieved is not known, and is never likely to be fully understood.

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There are, however, a number of theories. The least acceptable is that the step was taken directly from hunting practices, and in particular by the capture and taming of animals for use as decoys. It is just conceivable that this may have been true of reindeer.[3] Another and contrary view depends upon the womenfolk having already made enough progress with agriculture for some extra food to be available to tempt hungry animals. Again it has been suggested that in the conditions of post-glacial desiccation (p. 26) the wild flocks and herds became more and more concentrated in the neighbourhood of water, and more and more open to human influence and control. The last two explanations are compatible and can well be combined. 'It happens that just in those regions of Hither Asia where ancestors of wheat and barley grew spontaneously, there lived also wild sheep, goats, cattle and pigs. Now the hunters whose wives were cultivators had something to offer some of the beasts they had hunted—the stubble on grain plots and the husks of the grain. As suitable animals became increasingly hemmed in to the oases by the desert, men might study their habits and, instead of killing them offhand, might tame them and make them dependent.'*

One authority has put forward a theoretical time-sequence for the domestication of the different groups. First the scavengers, such as the dog; second nomadic animals such as the reindeer, goat and sheep; third beasts for which a settled life is essential—cattle and pigs; finally animals that can be used for transport including the horse, the ass and the llama. While the dog was certainly domesticated in Mesolithic times, and the horse not until after the Primary Neolithic period, the validity of the distinction between the other two classes is very dubious. However, it will be remembered that at the Belt Cave in northern Iran domesticated sheep and goats were found in the earliest, pre-pottery, Neolithic occupation dated by Carbon-14 to the first half of the sixth millennium, while pigs (the earliest known in the world) and cattle did not appear until the later Neolithic occupation dated to the second half of the same millennium.

This evidence supports the priority of sheep and goats in order of domestication. Nevertheless it may be a purely local state of affairs, and not too much weight should be given to it. It has already been suggested in discussing the origins of the Neolithic way of life in general that it is wrong to look for a single precisely limited centre. Once the idea of taking partial charge of certain animals had got about, trials, some of them successful, are likely to have been made in a number of regions and by divers methods.

The biological aspects of domestication must be briefly considered. The beasts composing the early flocks and herds in the cradlelands of farming, and those later led into Europe, were usually much smaller than their wild counterparts. The cattle in particular (*Bos longifrons*) were as diminutive as the modern Kerry. The usually accepted explanation is that wherever

* V. Gordon Childe, *New Light on the Most Ancient East*.

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possible men selected the occasional dwarf from among the wild stock, and continued to be best able to keep and to breed from the smaller, weaker and more docile animals. It was only much later when domestication was complete and irreversible that their human masters could afford to reintroduce a strain from the larger wild breeds and to select for size and weight. Most bodily changes that have taken place in domestic animals have been due to selective breeding—for example the increased woolliness of sheep. On the other hand there does seem some tendency at least in dogs and pigs (though see below) to become progressively shorter in the muzzle, and for their coats to lose their natural protective shading and assume bright colours and piebald markings.

*Sheep and Goats*

In spite of a human inclination to estimate sheep and goats very differently, it is in fact difficult to distinguish between these two members of the sub-family *Caprinae* by their skeletal remains alone, very slight differences in the cannon bones and in the bones round the eye being almost the only reliable indication. It is already apparent from Chapter VIII that in practice it has very often proved impossible to determine whether particular Neolithic peoples kept goats, sheep, or both together.

All modern domestic sheep appear to be descended from three existing types of wild *Ovis*. The most important, because it was probably the species originally domesticated by the pioneer herdsmen of south-west Asia, is the Urial (*Ovis vignei*) which has a vast Asiatic range from the Elburz mountains to Tibet. It has a fawny brown coat with a darker band along the back; this is hairy on top but conceals wool below. The ram has large horns curving outwards and backwards, the ewe small prick horns like a goat. If this was the breed first tamed in regions south of the Elburz (and represented by those very early animals found in the Belt Cave), it was certainly also the one first to be carried westward with the farming economy into Europe, for it is represented by *O. aries palustris*, the famous 'Turbary' sheep of the earliest Swiss lake-dwellers. It was, indeed, the breed raised by most of the early Neolithic farmers of Europe.

Another type of wild sheep with domestic offspring is the Mouflon (*Ovis musimon*) with a rather more westerly range than the Urial; today varieties live in southern Europe (Sicily, Corsica and Sardinia) where they must originally have had a more extensive territory. It is also found in Cyprus; its area of distribution extends eastward from central Anatolia to northern Iran. It is rather like the Urial in appearance although with a somewhat darker, more reddish brown, coat; the ewes are hornless. It is not known where the Mouflon was first domesticated, but it undoubtedly was introduced into Europe at a later date than the Turbary—for it does not appear among the Swiss lake-villages until the very end of their Neolithic occupation.

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A third wild species that has contributed to our modern stock is the Argali (*Ovis ammon*) at home in the highlands of central Asia. It is very large, and bears long horns making a forward turning coil. It is possible that such a powerful animal would not have found favour among the early domesticators. Its earliest recorded presence seems to be as a cross with Urial at Anau at the end of the Neolithic occupation there. Argali elements certainly spread westward and are dominant in the Merino breed. A beast apparently representing a pure Argali variety was found in deposits in the English Thames dating from Bronze Age times.

It is still impossible to give any coherent account of the domestication of what was probably man's first milk-giver—the goat. It is likely, however, that the Bezoar goat of Turkestan and Afghanistan was the most important ancestral species.

The Big Horn is the wild sheep native to the New World. It was never domesticated, sheep not having been kept by the pre-Columban peoples of America.

*Cattle*

All humpless breeds of cattle are believed to be descendants of the wild *Bos primigenius*, or aurochs, which was a native of the plains from southern Russia to the Altais. The bull of this species is huge and carries wide, outspreading horns. Yet the cow (as is well shown among the Lascaux cave-paintings) has a much lighter build and more sharply curved little horns, and altogether looks less unlike the small, short-horned *Bos longifrons* (or *Bos brachyceros*) that composed the herds of most Neolithic farmers alike in the primary areas of south-west Asia, in Egypt and in Europe. At present, then, we have to accept the view that these little cattle were obtained by giving preference to dwarfs and weaklings. Here and there, as in Britain, re-admixture with the wild aurochs evidently took place even in these early times. That it took place subsequently in many areas is shown clearly enough in the heavy long-horned oxen that still pull carts and ploughs in so many quarters of the Old World. Breeds in which the *Bos primigenius* element is even stronger are found surviving in small pockets in remote places—as, for example, the highland cattle of Scotland.

It is very interesting to find the humped zebu (*Bos indicus*) already fully developed in one of the earliest of the upland sites in Baluchistan, supposedly founded as much as five hundred years earlier than the Indus civilization itself. This was at Rana Ghundai in the Zhob valley, where the bones lay among the remains of the oldest occupation—apparently a camp of partly nomadic herders. The zebu is also depicted in a highly stylized fashion on the pottery of some of these early upland village sites. No wild humped species is known, and it seems likely that this development, apparently a method of storing extra fat comparable to that of the fat-tailed sheep, must have arisen with domestication.

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*Pigs*

Although in the theoretical classification of domestic animals quoted above the pig is put with cattle as demanding a life of settled farming, it may first have been attracted to human settlements as a scavenger. It seems very likely that two wild breeds were severally domesticated, though crossed in later times. The common wild boar (portrayed in all its savagery by many Palaeolithic painters) is native right across Europe, north Africa and central Asia as far as Siberia. This is *Sus scrofa*, undoubtedly the ancestor of the oldest known domestic pigs, those whose remains were left in the Belt Cave over seven thousand years ago, and of most of the pigs found on Neolithic sites throughout south-west Asia, Egypt and Europe. The Turbary pig of the Swiss lake-villages is sometimes distinguished as *Sus scrofa palustris*. The second ancestor is *Sus vittatus*, a wild pig with a much shorter snout at home in south-east Asia. This species is the prototype of the pigs kept by the first Chinese farmers (p. 255).

*Llama and Alpaca*

Very little is known of the domestication of these two species (both related to the camel) which were the only large domestic animals of the New World. As has been said, they were limited to the highlands of South America. The llama is undoubtedly descended from the wild guanaco, and it is interesting to find that its coat shows just the same tendency to strong colour and piebald marking found in the domestic animals of the Old World. The wild ancestor of the alpaca seems to have died out—unless indeed this animal was the result of a cross between the guanaco and the vicuna. It can be argued that the llama was only partially domesticated, in ancient times as today, for it probably often found its own food and shelter and calved away from human surroundings. Neither it nor the alpaca has ever been brought to the stage of domestication at which it could be milked.

*Horses and Camels*

Horse bones have occasionally been found on the Neolithic sites in both Europe and Asia. The camel was very dubiously reported at certain Tripolye sites. Both occurred in the same early level at Rana Ghundai in Baluchistan that yielded the remains of zebu. There is little question that the story of the domestication of these transport animals belongs in great part to a later phase of human history.

## FARMING METHODS

The definitive basis of the primary Neolithic economy was small-scale cultivation with hoe or digging-stick from villages or hamlets, and the pasturing of flocks and herds on surrounding uncultivated pastures. The greater part of this early farming was developed on light upland soils or on

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such spreads of light soil as the loess and the yellow earth. In Egypt the Neolithic farmers were certainly raising crops on the changing flood plains of the Nile and as the deserts parched they must have come to rely more and more on the *wadis* for pasture. With the more systematic cultivation of the flood plains both in Egypt and Iraq (by the Amratians and al'Ubaid people) the true primary Neolithic period is coming to an end. Simple diversion of river- or spring-water for agriculture may have been used by these peoples as also, earlier, by the inhabitants of Jericho and other dwellers beside oases. But systematic irrigation, like the use of the plough, belongs to the next stage of man's agricultural progress. Chapter VIII has shown that while one of the prime reasons for the diffusion of farming eastward, and more particularly westward, was soil exhaustion and the need to clear fresh land, in the early centres in south-west Asia and south-east Europe villages were inhabited for generation after generation until their rubbish and disintegrated houses accumulated into mounds. How this was possible in upland regions with none of the natural soil renewal of the great river valleys is an issue that has been very generally avoided. It seems that these farmers must have learnt how to use manure, perhaps by folding animals on the stubble, or else were organized for the rotation of crops. There is as yet no evidence for either of these methods. Only in the Swiss lake-villages (which would appear to have been more stable than most western Neolithic settlements) have signs been observed of the collection of manure.

On the expanding frontiers of farming the normal procedure was for exhausted plots and the villages from which they had been worked to be deserted and new land cleared. Remarkable indications of the clearance and reversion of land have been detected in Denmark by means of pollen analysis. Here the first farmers had to tackle clearance of a kind that seems always to have been too much for the loess-loving Danubians: the clearance of deciduous forest. Studies were made in Danish bogs and 'it was found that at several places on the border between Atlantic and sub-Boreal times there was a sudden change in the country's vegetation. The forest trees (oak, ash, elm and lime) receded rapidly relatively to the herbaceous plants, indicating that clearances had been made in the once all-dominating forests. At this same time horizon layers of charcoal were observed in the bog and the first discovery was made of the pollen of cultivated cereals and of weeds normally found only in the vicinity of farmers and their dwellings. . . . These clearances were made at slightly different times in the various areas studied. The subsequent recovery of the forest can also be traced in the peat; after a local destruction of this kind the quick-growing birch returned first, then the other trees in the same sequence as in a corresponding process today.'* On one bog it even proved possible to record several superimposed clearance horizons, 'first somewhat faint, then more vigorous and, evidently, much

* C. J. Becker, 'The Introduction of Farming into Northern Europe'. Paper contributed for the *Journal of World History*, February 1955.

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more durable'. It has been insisted that the forests were fought by fire and axe as much to win pasture and fodder for the livestock as to get soil for crops. Thus it was definitely not fire-clearance farming such as that still practised in the conifer forests of Carelia. These horizons date from the earlier Neolithic phase in Denmark, though not from the very first known farming immigration. They give a marvellously convincing picture of the conditions of the Neolithic farming frontier in forest country. Pollen grains invisible to the naked eye have brought back a forgotten pioneering world.

The storage of grain both for seed and for winter consumption was of immense economic importance to the Neolithic peasant communities. Here, indeed, was the chief factor making possible the increase in numbers that everywhere accompanied the adoption of farming. In a dry country such as Egypt, storage pits lined with basketry could be sunk into the ground as they were in the Fayum (p. 310), while baskets and large pottery jars were also used. The Danubians (and probably many other Neolithic agriculturalists in countries with a considerable rainfall) took great trouble over the construction of stilted granaries. Presumably threshing was everywhere done on floors in or near the villages, and the straw kept for fodder and bedding.

Theoretically it seems that there must have been an early period when livestock were kept for meat, skins and perhaps hair and wool, and not for milk. Unfortunately nothing is known as to when milking, cheese-making and other dairy work began, or whether they were already practised by Neolithic farmers during their spread into Europe.

## NOTES TO CHAPTER X

1. Professor S. Mizuno points out that it is nevertheless worth noting that in south-east Asia tuberous plants such as the yam and taro have always played an important part and may perhaps be associated with the first stages in the planting of crops.
2. According to Professor S. Mizuno rice was undoubtedly cultivated during the Neolithic era in northern China. Also in southern China there are plenty of rice remains from the Neolithic sites.
3. Both Professor K. Birket-Smith and C. A. Nordman point out that many scholars hold a view contrary to that of H. Pohlhausen (*Das Wanderhirtentum und seine Vorstufen* (Brunswick, 1954)), and date the beginning of the domestication of the reindeer to a relatively late period [see K. Jettmar, 'Zu den Anfängen der Rentierzucht', *Anthropos*, 47 (1952), pp. 737–66].



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CHAPTER XI

# MATERIAL CULTURE

JUST as the habits of Palaeolithic man as a hunter and food-gatherer had harmonized with those of the natural world, so, too, his dwellings had made little or no difference to the prospects of nature. Caves and rock-shelters, low and shapeless huts, were hardly more conspicuously artificial than birds' nests or warrens. But with man's entry into the Neolithic phase he began fairly rapidly to assert himself, even though for the most part his building still lacked the formal qualities of true architecture. In many parts of the world villages grew up with houses that in one way or another asserted man's imaginative power and new control of materials; here and there before the end of the period he had raised temples and monumental tombs.

Needless to say caves were still inhabited. In very many lands, and those not all uncivilized, they are still lived in today. But the great increase in population, and still more the need for agriculturalists to live where there was no natural shelter, necessitated extensive domestic building that was bound in time to develop into domestic architecture.

## DOMESTIC BUILDING

In the Neolithic stage of economy, houses were everywhere built of local materials. These always played a considerable part in determining the plan and construction of the building. Thus although a change from, say, a round to a rectangular house plan is likely to mean a break in cultural tradition if it takes place within one region, such a contrast between one region and another may have little cultural significance. The use of large timbers on the one hand and of reed or matting screens on the other is very likely to result in a rectangular plan; any form of weaving (as in wattle and daub) round saplings or flexible poles favours a circular one. Stone, mud-brick and most other forms of pisé can be used equally well for either. Pit-dwellings tend to range from roughly round to sub-rectangular because exact shapes and straight lines are not easily produced by digging into the ground with primitive picks and spades. At the Yang-shao village of Pan-p'o (p. 256) the houses were both round and rectangular.

Climate is, of course, another natural factor strongly affecting domestic building. Whereas in warm countries flimsy modes of construction might go with reasonable domestic conditions, solid wind- and rain-proof houses were essential in many parts of Europe and Asia. Cold, and more particularly windy, climates encouraged the sinking of house floors below ground level

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and the screening of the entrance to the living-room with a porch or anteroom. Again, the sun-dried brick or other pisé construction, so popular, because so easily made, in south-west Asia, China and Africa, were out of the question in more temperate lands where rain was frequent and the sun lacked the necessary hardening power.

Pisé typically consists of soil (with as high a clay content as is available) tempered with chopped straw or dung, mixed with water and well trodden. It can be raised into solid walls between plank caissons, but the usual method in Neolithic times and afterwards was to make it into rough blocks, or moulded bricks. These, having been either patted up on a flat surface or pushed into a rectangular mould, were put out to dry in the sun—and turned from time to time until fully hardened. As the sun could effect no chemical change such as takes place when a brick is kiln-fired, the pisé blocks were liable to dissolve or crumble. A house built from them might not stand for more than two generations. As, however, it disintegrated without leaving any awkward and intractable rubble, a new one could easily be built on top of it. This relatively rapid replacement of pisé and other mud buildings is the chief explanation for the accumulation of mounds (*tells* and *tepes*) on permanent settlement sites. Although they were slight compared with the vast accumulations that formed below the later cities, even Neolithic villages could (as we have seen) accumulate a considerable thickness of layers. At Jericho the Neolithic levels were 44 feet thick.

The oldest-known farmers' houses are those of Jericho and Jarmo, and in both stone as well as pisé had been employed. The Jericho houses appear to have been close packed inside the walls very much as in the poorer quarters of modern towns where mud-brick is still in use. The oldest dwellings, those belonging to the older of the two pre-pottery Neolithic settlements, were rounded in plan and approached through a projecting porch with steps or a short ramp leading down to a sunk floor level. Although mainly of sun-dried brick of plano-convex, hog-backed form, some stone was used in the walls. At least in some the brick walls seem to have been carried up into domed roofs. The second pre-pottery Neolithic people of Tahunian culture brought with them a sharply contrasting type of domestic architecture. Their houses were rectangular and much more complex in plan, with a series of well-proportioned living-rooms. These were approached through a courtyard which also gave access to storage rooms and other outbuildings. More remarkable still was the careful interior decoration of the living-rooms. The walls were lined with lime plaster and sometimes painted. The floors were also plastered, burnished with smooth stones to obtain a high polish, and furnished with circular mats of plaited rush. The door frames were of wood, but probably closed with skin curtains rather than by doors. The bricks used for these later houses were also different from the earlier, and highly distinctive. They were shaped like flattened cigars and their makers had used their thumbs to impress a herringbone pattern on the upper surface.

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At Jarmo the houses consisted of several rectangular rooms built of pisé on a stone footing; they were furnished with ovens and basins sunk in the floors. At Hassuna (Fig. 39) the development is striking; immediately overlying the nomadic squatting place, the earliest true houses were of coarse rammed or kneaded clay, some round, some more rectangular, but generally lacking in formal plan; the late ones evolved towards a rectangular house of several rooms adjoining a courtyard with outbuildings. Here the walls were built of pisé blocks and had become completely merged into one another. Storage space was made by sunk jars (the oldest form) and by pits sometimes lined with gypsum plaster and coated with bitumen. The Jericho houses and these later ones at Hassuna give the best idea of the relatively commodious homes enjoyed by the most prosperous of the farmers between six and eight thousand years ago.

The houses at Cypriote Khirokitia were beehive-shaped like those of the early period at Jericho. Walls of mud-brick or pisé, well smoothed, rose from stone foundations. They were entered through wooden-framed doors,

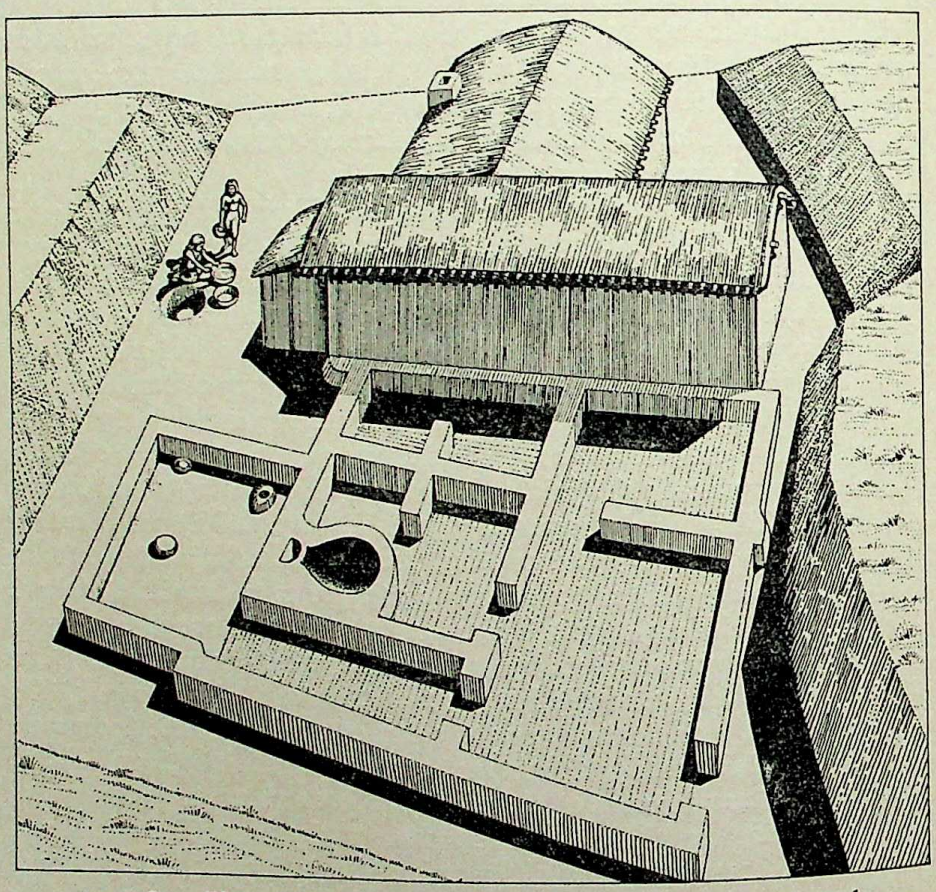

FIG. 38A. Plan of Neolithic house in Iraq: Jarmo (after Braidwood, courtesy of the Oriental Institute, University of Chicago).

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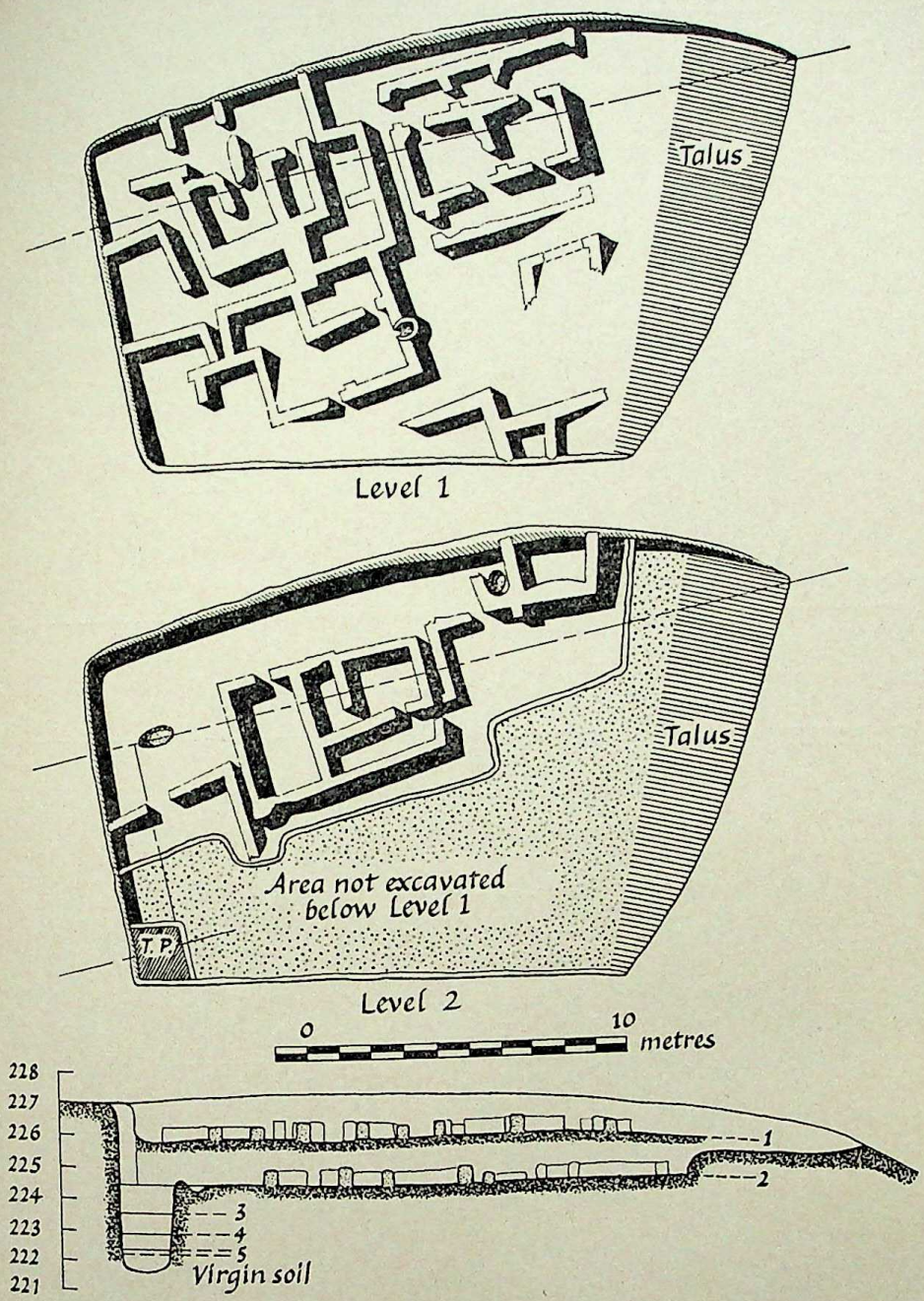


FIG. 38B. Plan of Neolithic house in Iraq: Matarrah (after Braidwood, courtesy of the Oriental Institute, University of Chicago).

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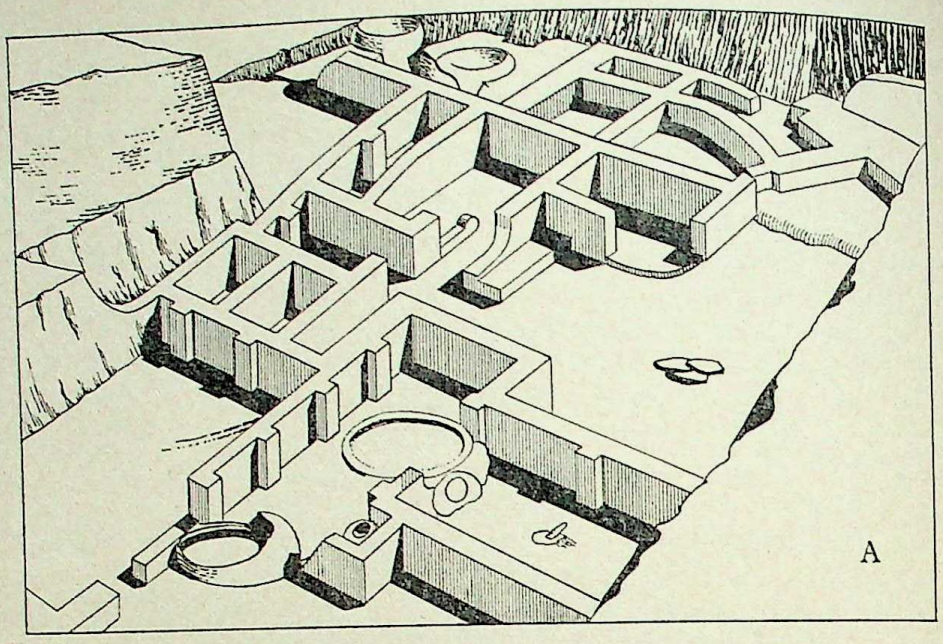


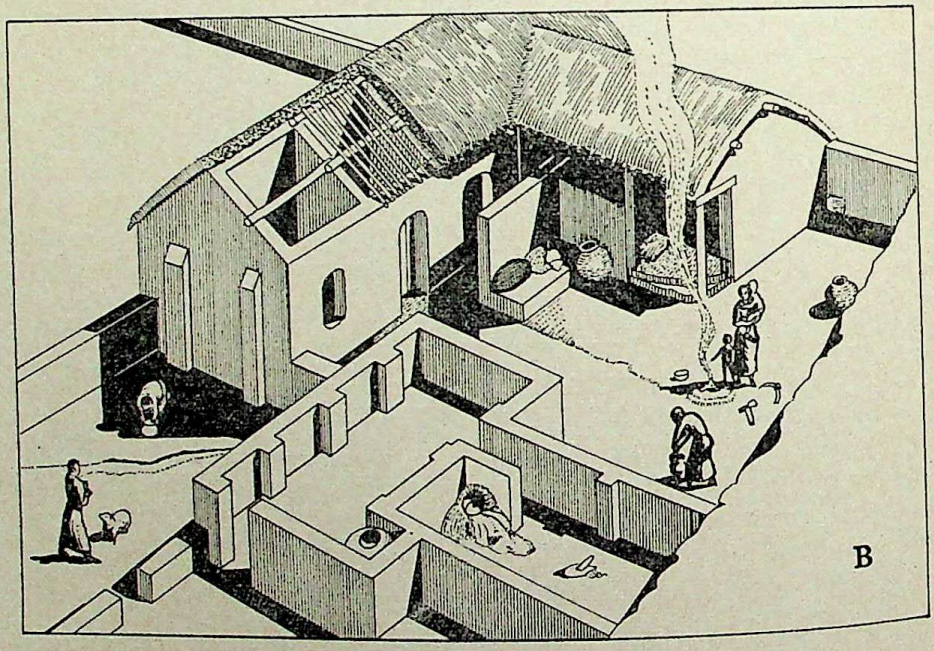


FIG. 39. Neolithic house at Hassuna. A: remains as found; B: reconstruction (after Singer).

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and floors, sunk slightly below ground level, were furnished with central clay hearths. A remarkable feature in several of these houses was a partial upper floor below the domed roof supported on square limestone pillars. Niches and cupboards might be let into these pillars. Some prosperous households at Khirokitia lived in compounds with a kitchen and workshops grouped round the main dwelling house.

Other comparable Neolithic sites have nothing very remarkable to add. In the Syro-Cilician region stone foundations and traces of wattle and daub as well as pisé walls have been found. Away to the north at the oasis site of Sialk where reeds were available these were used by the earliest settlers, but were later given up in favour of pisé. The al'Ubaid people who first settled the Euphrates delta lands where there must have been vast stretches of reed beds developed a much more elaborate reed architecture in which closely tied bundles were used as framework and the walls thickly plastered with mud.

Special mention should perhaps be made here of the domed, tholos-like rooms discovered in the Halafian occupation at Arpachiyah near Nineveh, and thought to be household 'chapels' or shrines rather than living-rooms. They were of mud-brick on a stone foundation. It seems very probable that stone-founded circular constructions found at another Halafian site, Yunus, and identified as 'kilns', were in fact similar ceremonial rooms and that this architectural peculiarity was characteristic of the Halafians. Many authorities believe it to have inspired the tholos tombs of the central Mediterranean and through them the megalithic passage-grave architecture of western and northern Europe.

In Egypt, rainless and warm, the pre-Dynastic villagers found no great need for substantial houses. In the lake-side settlements of the Fayum the huts were too flimsy to leave any trace beyond their fire-holes and basket-lined grain storage pits; so, too, were the first dwellings at Merimde. Later on, however, shelters seem to have been built from reed mats fastened to posts, and later again (perhaps as protection against the worsening sand storms) the Merimdians learnt how to build dome-shaped huts of rammed mud. To judge from Merimde, Egyptian villages may have been rather more spacious than the huddled ones of south-west Asia, for here the huts were ranged in rows, each in a garden or spacious yard, giving access to what must have been village lanes. Up river at Badari, families lived in matting huts very much like those of the second period at Merimde.

In north-west India the domestic builders probably followed the same general methods as those of Iraq and Iran. At the pre-Indus upland village site of Rana-Ghundai the houses were built on footings of boulders, but little seems to have been recorded as to their plan.

A great deal is known about the houses of the Neolithic farmers who spread westward through Europe. Here stone and wood were usual along the Mediterranean, and substantial wooden construction in the forested

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zones. The Neolithic houses of Crete were made of rather planless groups of little rectangular rooms raised on stone foundations. The El Garcel villagers (probably of African origin) preferred oval pit-dwellings for their hill-top settlements. The Vardar-Morava people to some extent represent an outpost of Asiatic tradition in that in addition to wattle and daub they sometimes built mud-brick houses. The related Boians, however, as we have seen (p. 251), lived in stout houses of split logs, while their neighbours, the Oltenians, already built the rectangular type of house with an anteroom or porch, known as the megaron, that was to have a long and distinguished development among the Greeks. The Oltenians were also responsible for a very early exercise of fantasy in domestic architecture, for the people of Ërosd crowned their gables with elaborate spiral-shaped clay finials. Enough has already been said of the comfortable porched houses of the prosperous peasants of the Black Earth lands of the Ukraine.

The dwellings of the Neolithic Danubians seem to have evolved through three styles. The first (until recently believed to have been barns) were very imposing, long, rectangular houses sometimes as much as 32 metres in length. The central ridge of the steeply pitched roof was supported on a line of posts, flanked by a further line on each side that presumably helped to support the sloping rafters. These long houses were divided into two parts, one end having a raised floor and walls of split logs sunk into the sub-soil, the other lighter walling of wattle and daub. Perhaps the timbered end only was used for human living, the rest being handed over to the animals or used for stores. From these first houses, among the finest built in Neolithic Europe, the later Danubians seem to have changed to a smaller, two-roomed megaron type of house, and then to a still smaller one-roomed form. Some of the second type were built on marshy ground on the Federsee in Württemberg, supported on a framework of beams and floored with a substantial platform of timber (Fig. 41). Typically each house was rectangular and had two rooms—an anteroom and an inner chamber. The roof was gabled and the walls were of split sapling and wattle. In the anteroom, a beam with mortise holes for two uprights lay before the open hearth; it was probably part of a drying frame. In the inner room, in the right-hand corner were supports for a raised couch or bench, and a hearth lay against the partitition. It is thought that the food and materials were prepared in the outer room, where there was normally a clay oven for baking bread. In front of each house was a planked forecourt, presumably a place for working and sitting. These Aichbuhl houses are a little later than our primary Neolithic diffusion, but the simple peasant interior that they suggest probably offers a fair picture of great numbers of Neolithic homes in central Europe. They, their larger predecessors, and indeed most of the wooden houses of Neolithic Europe, demanded much labour and not inconsiderable carpentering skill. Probably the long-handled adze was the principal wood-working tool used by the Danubian house-builders.

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In spite of the preservation of so many of the perishable possessions of the Cortaillod people of Switzerland, the exact plan of their dwellings is uncertain—though perhaps generally rectangular. They stood in small groups on the damp or boggy margins of the lakes. Although it is now the prevalent view that they did not stand on raised piles, there is no question that in many instances piles were driven into the soft soil beneath them to discourage sinking. Some had wooden floors supported on sticks or timbers resting directly on the wet ground. Others utilized long sheets of bark to keep out the damp, while others again had clay floors. Clay hearths were a common feature, and often they had to be renewed again and again as they sank into the soft soil beneath. Nothing is known of the plan of the only Neolithic lake-dwelling to have been recognized in Britain, at Ehenside Tarn, Cumberland.

Not very much is known, either, of other forms of domestic architecture among the Windmill Hill people of Britain. They certainly camped at least seasonally in their hill-top enclosures (p. 296). Hearths and rubbish pits have been found in the interior, and considerable quantities of domestic rubbish in the ditches. One oval hut was found inside the entrance of a camp in Devon, otherwise true house remains are unknown in them.

Another Windmill Hill house has been found at Haldon, also in Devon; it was a small rectangular building about 6 metres long with stone footings that probably supported wattle-and-daub walls; it may have had a screened-off anteroom, and an inner living-room with a hearth in one corner.

In Denmark we are once more in country where long houses in wood were apparently the usual form of early Neolithic domestic building. It will be remembered that at Barkaer in east Jutland the earliest Trichterbecher farmers seem to have lived many families together in two immensely long houses (one was 85 by 6·5 metres) divided into a number of rooms about 3 metres across. These were not of solid timber construction but were built of poles with branches plaited between them. Such communal long-houses recall those of the north-west coast Indians of America. Fine wooden houses, belonging to a rather later phase of the Danish Neolithic, are those of the village of Troldebjerg where there was a long row of rectangular buildings, at least two of which were houses about 30 metres long. They may be compared with the lovely farm-houses still characteristic of the Black Forest country of Germany, in that their gabled roofs sloped right down to the ground on one side and covered both the family living-room and the stalls of the beasts.

One other site in the extreme north of Europe deserves description here, even although it falls a little later in time than the primary Neolithic phase. This is the village of Skara Brae in the Orkney Islands that was built by a community of stock-breeders directly descended from the native Mesolithic population of Britain. Probably by the time they were making their homes in these bleak and remote islands bronze was already coming into use



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in England, but their own economy remained fully Neolithic. The compact little village was built in a hollow among sand-dunes, and the excellent pasture of the treeless (because gale-swept) countryside made possible a settled economy; Skara Brae was continuously inhabited for many generations. The houses were squarish though with rounded corners, measuring up to 20 by 18 feet and with substantial stone-built walls. The roofs were partly corbelled but the central opening may have been closed with whale-bone rafters. Each was entered through a very narrow entrance only

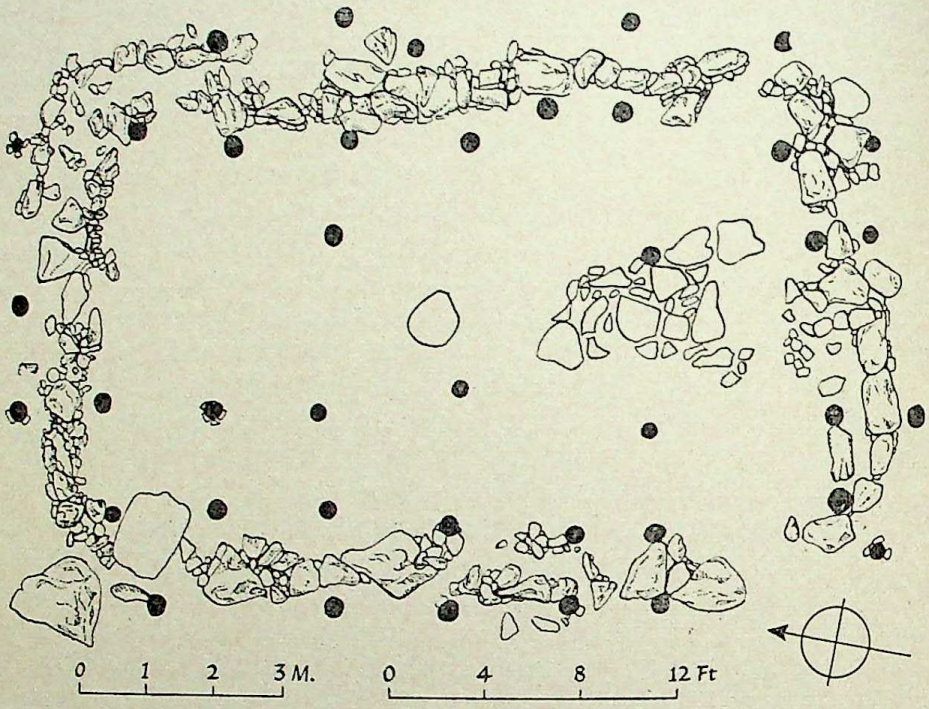


FIG. 40. Plan of Neolithic house at Knockadoon, Limerick, Ireland (after O'Riordain). Black spots mark post-holes.

4 feet high closed by a door, presumably of stone, which could be fastened by a bar of stone or whale-bone. In the centre was a square hearth on which a peat fire burned (with a stone seat beside it). On either side were beds, enclosed by stone slabs, once containing a mattress of heather and covered with a canopy of skins supported by stone bed posts. Shelves in the walls above the beds served to store personal possessions. Small boxes of thin slabs with carefully luted joints let into the floor seem to have been intended to hold liquids. A two-shelved dresser of stone stood against the back wall. One to three small cells opened off each hut; some may have been used as storerooms, others as privies, since they are drained. The huts were grouped into regular clusters connected by paved alleys. In its final form Skara Brae comprised six or seven dwellings and one 'industrial hut' (probably

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used communally) that lacked the usual beds and dresser but was provided with a kiln and had been used as a workshop by a chert-knapper. The alleys connecting the houses were all roofed over and the whole complex buried in sand, refuse and ash. Skara Brae was drained by a system of stone-lined sewers running under the huts.

This Orkney hamlet (and there is a similar one in another island in the group) is of particular interest here for two reasons. One is the extreme adaptability to the environment that it demonstrates. In response to the tireless winds of these northern latitudes the whole cluster was under shelter, converting a hamlet into what was almost a new kind of communal dwelling. In response to the total lack of wood, whale-bone was used for roofing, the readily split local flagstone for furniture. The second interest arises from this use of stone in place of wood. It had never been suspected when more normal Neolithic homes were being explored that they would have been furnished with the elaboration found in this humble little northern settlement. Some kind of box-bed possibly, but a two-tiered dresser with a cupboard-like arrangement at the base, a bedside cupboard and closets, would seem extraordinarily improbable. Looking into one of these living-rooms and imagining the place with its furs and its firelight and its ornamental crocks one could easily suppose it to be exactly the kind of peasant home that survived in northern Europe until the present century. Were other Neolithic homes equally well equipped—indeed better, as would befit the larger houses and richer communities to be found in easier lands? It can hardly be doubted that they were. Indeed, reflecting again on these interiors where the furnishings have been, as it were, petrified into survival, it appears that just as farmers were from the first dependent on the same cattle and sheep, wheat, barley and maize that are still the basis of our lives today, so, too, almost from the first they found how to satisfy the essential needs of a simple peasant life in a manner that was to endure for many thousands of years: the hearth and the fireside seat, the comfortable bed and the dresser with its utensils.

Before leaving Neolithic dwellings we should perhaps look across to what is almost the opposite limit of our range from the far north-western Orkney Islands. The Yang-shao pig-keepers of China sheltered themselves in roughly rounded pit-dwellings, and enclosed their villages within mud-built walls.

At the village of Pan-p'o, Shenshi province (p. 256) the rectangular houses were from 4 to 6 metres long with rounded corners and floors sunk up to a metre below ground. The walls were of clay containing grass, and the roofs of the same mixture above rafters supported on central posts. Most of the round houses were built on the ground surface without sunken floors. In construction they were similar to the rectangular ones except that inside the clay walls were reinforced by a ring of small posts or poles.

The houses of the pre-pottery farmers in the Andes were usually roughly

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oval, with floors sunk into the ground and lined with cobbles. The roofs did not rise much above ground-level and were supported on wooden or whale-bone rafters.

## VILLAGES AND ROADS

When we come to consider the characteristics of Neolithic settlements as a whole, it is evident that they vary with local circumstances even more than do individual houses. It would be true to generalize to the extent of saying that in the earlier phases defences were usually absent or slight owing to the pacific temper of primary Neolithic economies. A ditch and palisade against wild animals or straying cattle was frequent enough, but anything on a scale to be called military works very exceptional. Yet we at once have to recognize the great exception presented by Jericho. Jarmo and other

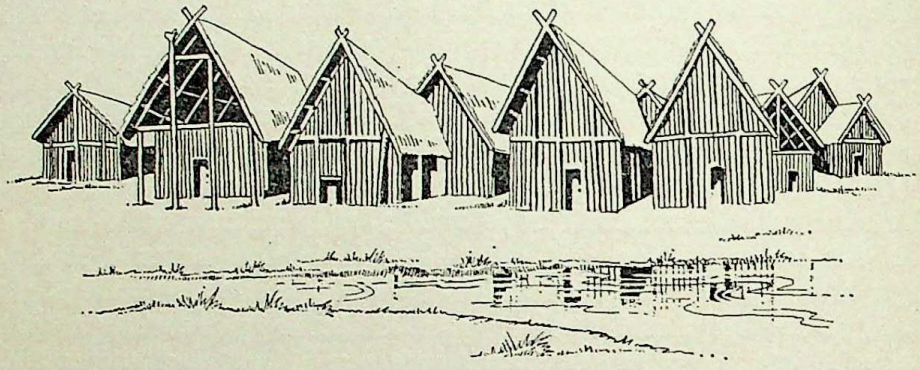

FIG. 41. Neolithic village of the Danubian culture: Federsee, Germany [reconstruction (after Coon)].

early villages in south-west Asia seem to have been entirely open. Yet the earliest Jericho had masonry walls of massive mortared stone that still stand to a height of 12 feet. An internal drum tower had a long flight of steps running down from its summit, through its solid core to street level. (Pl. 9, *b*). Tanks seem to have been built against it for water storage. Thus nine thousand years ago there were already men living in surroundings not at all unlike those of a small mediaeval town.

At the typical Danubian village of Köln-Lindenthal (Fig. 42) the first houses were unprotected for a while, then later fenced against animals. It was only after the site had been deserted by these shifting agriculturalists and reoccupied at a time when land shortage was beginning to make itself felt that a part of the village was strongly entrenched. The 'interrupted ditch camps' of the Windmill Hill people of southern England were curious structures. Usually built round hill-tops, there were two or more concentric rings of earthworks; the banks appear to have been continuous, but the ditches from which they were dug were no more than intermittent, thus

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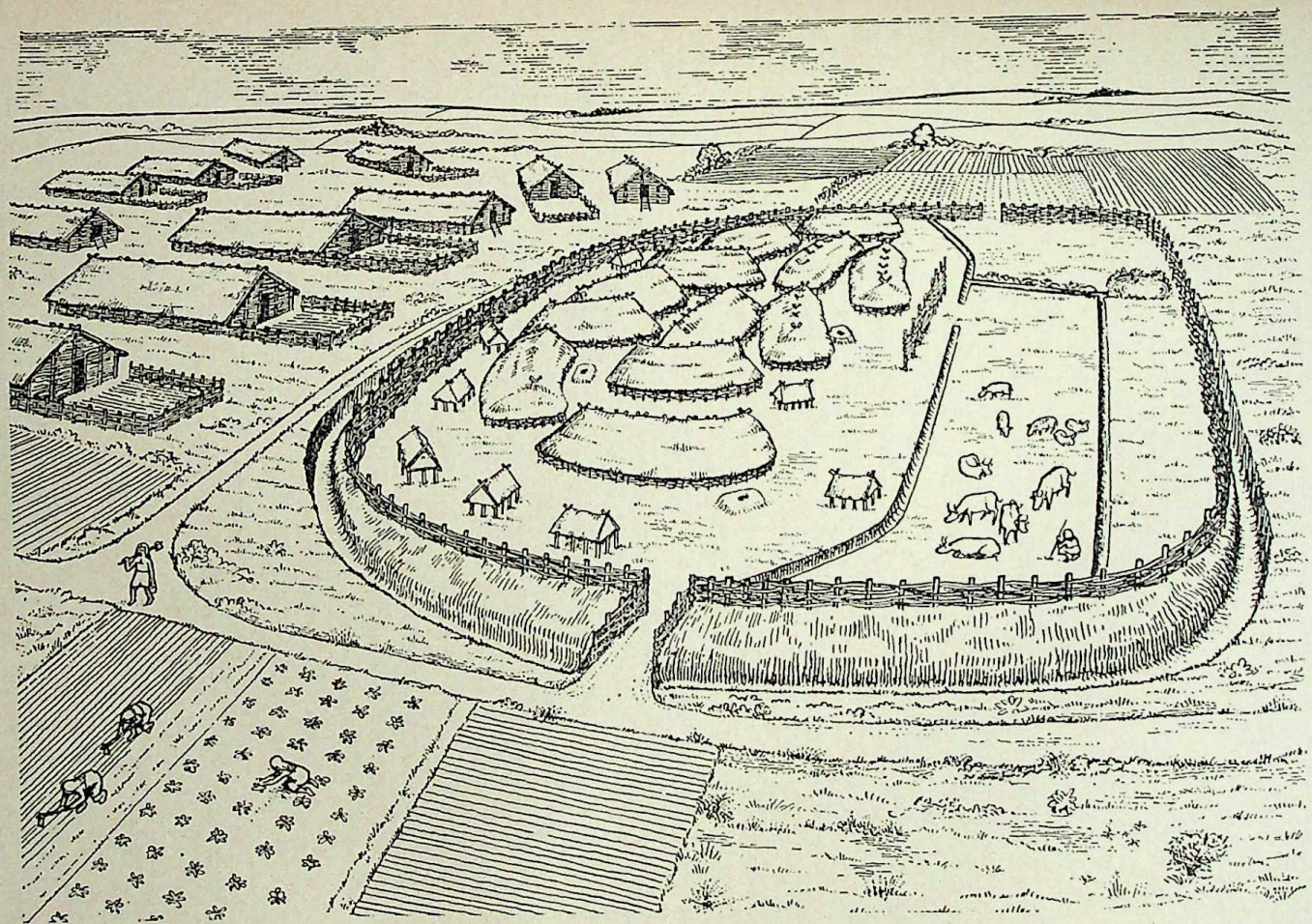

FIG. 42. Neolithic village of the Danubian culture: Köln-Lindenthal (reconstruction).

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forming a chain of long pits. The banks were sometimes reinforced by palisades. As we have seen (p. 247) these places were probably seasonally occupied camps rather than true villages. Rather similar entrenchments were dug by the Michesberg people in south-west Germany. Stone or earth walls and embankments seem often to have been raised round hill-top settlements by the western Neolithic peoples of France. The Camp de Chassey, Le Campigny, Fort Harrouard and the Camp de Catnoy are all possible examples, but the exact period in their history at which they were fortified is uncertain. Undoubtedly, however, these hill-top settlements look defensive, and the possibility that the western farmers felt a need for protection against indigenous peoples of Mesolithic tradition cannot be ignored.

The internal structure of the villages would have varied with the architecture. In many of the Asiatic villages where the houses were close-set rectangular buildings the roads between them would have been narrow, crooked alley-ways; at Arpachiyah the alleys were cobbled. At Khirokitia a paved 'high street' ran through the settlement, with stone ramps leading down to the individual houses. In Egypt, Merimde gives evidence for straighter, more open lanes running between the fences of gardens or yards. In most European villages there were presumably simply stony or muddy paths between the huts, but in some of the marsh villages north of the Rhine (such as Aichbhul, on the Federsee, Fig. 41) the rectangular wooden houses fronted roads carefully made with transverse timbers in the regular 'corduroy' fashion. Skara Brae in the Orkneys was, so far as is known, unique in having the little paved alleys between the few stone houses completely roofed over.

As for roads outside settlements, they were probably never surfaced before the use of wheeled vehicles. Nevertheless the Neolithic economy must have led to a sharp contrast with the unobtrusive pathways used by the hunters. Where there were sizeable villages there must have been well-marked tracks and fords. Sometimes, undoubtedly, there were long-distance routes, either ridgeways following the tops or slopes of hills, or valley-ways keeping to firm ground beside the rivers. An example is the Icknield Way across south-east England that seems already to have been followed by the Windmill Hill folk. The stone-cut tracks of Malta, pairs of ruts about $4\frac{1}{2}$ feet across and running for distances of many miles, are now thought to have been formed by the tilted sledge or *travois*, at a time when the now bare limestone slopes were still soil-covered. It is not certain that any of them date back to Neolithic times.

## CEREMONIAL BUILDINGS

The colonnaded building at Jericho is unquestionably the first that can reasonably be identified as a temple. It was not like the ordinary houses in the town, and the association with it of animal figures makes the identification almost certainly correct. The al'Ubaid people built temples: they have

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been recognized at both Eridu in the south and Tepe Gawra in the north. Already their architecture foreshadows what was to be magnified and elaborated in the city temples of historical times. Founded on platforms, they were rectangular sanctuaries furnished with altar and offering-table. Outside, the prismatic mud-brick walls were heavily buttressed—a device that developed into the striking recessed façades of the later architecture.

Jericho and the al'Ubaid villages show that when communities were beginning to lose their simple rural character and develop towards little towns, special buildings might be communally instituted as places of worship —and perhaps served by a small priesthood. But this was not the usual pattern for primary Neolithic societies. Mention has already been made of the circular domed shrines at Arpachiyah. The latest and largest of them was as much as 30 feet across, and approached by an anteroom 60 feet long. Images of the Mother Goddess were associated with one of them. But such sanctuaries were exceptional; usually the Neolithic folk kept their cult objects in their own huts and houses and had not thought of combining to build places of public worship.

Something must be said of what might be taken as striking exceptions to this pattern: the great temples of Malta. These were built by villagers living in a genuinely Neolithic cultural stage; on the other hand this island population was certainly retarded, remaining long without metal and developing striking local peculiarities in isolation. The temples, like the megalithic tombs with which they have affinities, were in part inspired from the centres of civilization. In this sense they are not truly a part of primary Neolithic culture, yet they, like the tombs, show what Neolithic communities could do under the stimulus of a religious idea. The temples, such as the two finest examples of Hagiar Kim and Mnaijdra, are composed of double apsidal chambers, the apse roofed by corbelling (Pl. 11). The entrance-ways, communicating doorways and certain recesses are made of enormous blocks of stone, some of the doorways are closed by slabs perforated to make a small round opening. The walls are sometimes formed by stone slabs set alternately flat and edgeways on, the edges projecting a little beyond the flats. These sanctuaries have been many times altered or remodelled, and it appears that the latest refinements were made well into the second millennium BC. In these later stages at least, if not before, the blocks of masonry have been accurately shaped with stone hammers, sometimes given a kind of ornamental rustication, and enriched with spiral designs and processions of men and animals. The presence in these strange buildings of many cult objects, mostly evidently related to the Mother Goddess, prove them to have been religious in purpose and therefore legitimately to be described as temples. Certain buildings in the Balearic Islands may be related, although they belong to a full Bronze Age; while they have some features in common with the Maltese buildings, they are particularly distinguished by pillars supporting large flat slabs and so resembling gigantic pedestal tables. It has

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been suggested that these *taulas* are merely roof-trees, but it is more probable that they have some cultic significance.

There is no question that in their origins the Maltese temples have some relationship with the megalithic and related funerary architecture of the western Mediterranean and Atlantic coast lands (p. 249). In these tombs, too, we are again dealing with a trait derived ultimately from a higher culture that was grafted on to local cultures still in a Neolithic stage of development. Enough has already been said of the history and general forms of this remarkable architecture—certainly among the greatest and most imaginative achievements ever made by peoples dependent on a primitive rural economy. It would, however, be appropriate here to say a little more about the building methods employed. Both the passage-grave and gallery forms might sometimes be cut into limestone, chalk or other soft rocks, sometimes built in the true megalithic style with huge blocks weighing many tons. Again, particularly with passage-graves, small drystone building might be favoured, or, very commonly, the drystone technique be used in conjunction with megaliths. Often the large blocks are unshaped or only roughly dressed and the building therefore of a very crude though monumental kind. On the other hand where, as in the enormous passage-grave of Maes Howe in the Orkney Islands, the local stone is laminated and readily splits into regular shapes, an extraordinarily exact and narrow-jointed masonry was obtained. The corbelling of the roofs of the main chambers of passage-graves was often executed skilfully and on a massive scale. The apex of the roof of the richly carved New Grange in Ireland is nearly 20 feet above the floor, that of Maes Howe originally about 15 feet. In their total length chamber and passage may be over 65 feet, while the covering mounds are frequently large enough to support small churches built on them by Christians anxious to counteract the influence of lingering pagan customs. The galleries, though generally smaller than the passage-graves, are often very roomy; an example in Scandinavia, walled with huge orthostats, is as much as seven feet high throughout. In very many types of tomb strong architectural emphasis was put upon the portal, both at the outer entrance and at the openings to inner chambers. Sometimes, dummies were made, either to conceal the real entrance or to serve as a purely ceremonial feature. These monumental trilithon portals must be related to those dominating the Maltese temples, and may conceivably lie at the back of the trilithon construction at the great Bronze Age temple of Stonehenge in southern England.

It is appropriate here to mention the Late Neolithic sanctuary that has been proved to underlie the Bronze Age monument at Stonehenge. It was a circular embanked area with a ring of ritual pits inside the bank and numbers of cremated burials. There is no evidence for any settlement in the immediate neighbourhood. This earliest sanctuary at Stonehenge is chiefly of value in warning us that although places for public worship or

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ritual may not be found in Neolithic settlements, it does not follow they never existed. Sometimes, and particularly among the more highly pastoral and therefore less settled Neolithic societies, there may have been ritual meeting-places raised and used by scattered communities ranging over wide territories.

Our ignorance of the early Neolithic scene is still much greater than our knowledge. The passage of thousands of years and the activities of hundreds of later generations have allowed little enough to survive of the handiwork of the pioneer farmers. Yet the last two chapters have shown that these humble founders of a way of life that was to be the basis of all the human achievements still lying in the future were already beginning to change the face of the earth. By 4000 BC in the cradlelands of farming, by 2000 BC in the regions of its primary diffusion to the west and east, large tracts of land in Asia, Africa and Europe had become man-made landscapes. In one countryside it might be a numerous scatter of clustered mud-brick villages; in another a straggle of matted huts; in a third, groups of high-roofed wooden longhouses. Here the surroundings might be open or even semi-desert; there dense forest might enfold the settlements or marshes or water stretch round them. But everywhere in the favoured regions there were human habitations surrounded by cultivated fields and well-cropped pastures. And everywhere there were increasing numbers of men, women and children endowed with the energy and the powerful, if hardly conscious, will that was to strengthen their control and extend it more and more widely.

## POTTING AND POTTERY

It was long held to be axiomatic that true Neolithic cultures included the craft of potting among their skills. Very soon after agriculture made a settled home both possible and necessary, woman invented the processes of shaping and firing clay. An added incentive was provided by the need for watertight containers and cooking-vessels to contain cereal foods and, perhaps, dairy produce. So the argument went. It remains true up to a point, but we now know that farming and a settled life had been established, at any rate in south-west Asia and the eastern Mediterranean, thousands of years before the invention of fired pottery. As we have seen at both Jericho and Jarmo (pp. 223–5) there was a long period of occupation before pottery came into use. At Jericho the first pots can be dated to about the middle of the sixth millennium BC, while the settlement goes back towards or into the eighth millennium. There was a clearly defined pre-ceramic phase in Peru, when the farming and fishing communities of the coast made free use of gourds. Although the introduction of pottery among them has not been closely dated, it may have taken place by 1200 BC. Villagers in the Valley of Mexico were making good pottery as early as 1500 BC.

When potting reached Jericho and Jarmo, the craft had evidently

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progressed beyond the experimental stage. Nowhere in south-west Asia have the first tentative efforts at the firing of clay vessels been recognized. It is an invention of a kind that could easily be made in a number of different centres, for the structural change that takes place in clay when the chemically combined water is expelled at between 450° and 700°C can be observed in various fortuitous ways. If baskets lined with moist clay to make them watertight fall into the fire then a partially hardened vessel may result; fires lit on clay-daubed hearths or cooking-pits can easily cause them to become fully fired.

The craft was almost certainly independently invented in America,[1] and there is no reason why it should not have had more than one home in the Old World. On the other hand, it is an invention that can be spread simply as an idea by word of mouth. For instance, the Basket Maker Indians in the south-west of the United States seem to have got hold of the general idea from southern neighbours, but they had to work out all the processes for themselves. It is not impossible that the same thing may have happened among the Ertebølle people when they first adopted potting.

The raw materials for the making of pots are widespread throughout the world. Clay is the product of the decomposition of rocks, particularly the granites and gneisses that are largely made up of feldspar. The chemical breakdown of feldspar is caused by the action of carbon dioxide and water on rock surfaces in areas where air is excluded by bogs or other natural blankets; the resulting clay minerals are hydrated aluminium silicates with small admixtures of such constituents as alkalis and iron oxides. Kaolin is the most important of the primary clays formed in this way; its deposits are fairly well marked by the present-day distribution of famous china manufactures: they lie in south-west England and Brittany, round Limoges and by the Pyrenees; in Saxony, Czechoslovakia and the Ukraine, China and the southern United States.

This is the substance that, if suitably compounded and raised to a high enough temperature, will vitrify into porcelain. Practically all the clays used for ordinary earthenware, however, are secondary clays that have been carried from their original beds by water, wind or ice, and redeposited mixed with various impurities. These secondary clays are found in almost every kind of territory except on sandy deserts and coral islands. Locally, however, they occur only sporadically, and in upland country are usually limited to the beds of lakes and rivers. Thus in a primitive culture woman potters must often make short expeditions to collect their raw material.

Natural clay is highly plastic when worked with water, but may become too sticky to handle. Partly to counteract this stickiness and partly to obtain a greater porosity that prevents cracking and warping when the pots are being fired, it is commonly tempered with such things as powdered quartz, flint, sand or shell; occasionally old potsherds may be pounded up and used for this levigation—or even chopped grass or straw. The work of

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mixing the clay, water and tempering material is heavy and not unskilled. If a large quantity was to be mixed, it may sometimes have been done by trampling underfoot, but an ordinary Neolithic potter working for her family would probably have kneaded it by hand—a manipulation very similar to that of pastry-making but carried out with a force that would produce a leaden pie-crust. For very fine and thin wares the clay might first have to be dried out, pounded and sieved.

Once the clay had been prepared, there were several ways in which the Neolithic potters may have proceeded to build up their vessels.

The wheel, the use of which is responsible for so many of the features that we regard as characteristic of pot forms, was nowhere used in the primary Neolithic phase. The simplest method, feasible for simple dishes or bowls, was to take a ball of clay, push the thumbs into the centre and then gradually lift and thin the walls by pressing them between thumb and fingers. No great size or height can be obtained in this way, and the primitive potter is likely to use either the coiled or the ring technique for her more ambitious vessels. In the first a continuous roll of clay is used spirally, each turn of the spiral being pinched on to the one below; in the second the procedure is similar except that separate rings are built one above the other. When the pot has been roughly put together in either of these fashions, the walls have to be thinned and the shape perfected. The thinning may be done simply between the fingers, one hand working inside the pot, the other out, or some convex surface such as that of a pebble may be held inside while the outer surface is either patted with the flat of the hand or with a specially made wooden bat. The more thoroughly the thinning and shaping are done, the more completely will the coils or rings be united into one piece; in the coarser prehistoric wares the lines of junction often show when the pot is broken, but in the finer fabrics they cannot be detected.

Whatever method is employed, the gradual thinning and symmetrical shaping of a pot requires that it shall be turned round and round—a need that was bound in the end to be met by the invention of the spun wheel. Although the Neolithic potters had not advanced so far, they probably used simple devices to facilitate turning—one of which would be building the pot in a large curved potsherd that would readily turn on a hard floor. When two women worked together the vessel could of course be made to revolve if it were fixed to any solid base as a turn-table.

Having been fully shaped the pot must be left to dry in the air. When the water content is reduced to about 8–15 per cent it is in the 'leather hard' state and is ready for trimming, decorating with impressed designs (some of these are more likely to be made when it is still fully wet) and above all for burnishing. This rubbing of the walls, with or without a slip coating of finer clay, not only gives an agreeably glossy surface but helps to make the fabric less porous and therefore more watertight. A smooth pebble is the most usual burnishing tool. The pot is now further air-dried

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(and at this stage a strong sun is an advantage) until the water content is down to about 3 per cent, and it is ready for firing.

Many primitive potters fire without the use of a kiln, and as very few remains of early Neolithic kilns have been discovered, it is probable that they were seldom used. On the other hand, it will be remembered that even Palaeolithic hunters (pp. 135, 161) used a kiln-like structure for hardening animal figurines, so that it would not be surprising to find this method of firing in use among even the earliest potters. If firing is to be done without a kiln, the batch of air-dried pots is piled, often in a hollow, with fuels such as brushwood, grass, straw or dung placed below, among and over them. With a hot fuel such as brushwood this process may take as little as an hour, but the uneven distribution of heat is likely to make many wasters. Better results are obtained if a method akin to charcoal burning is used, the pot stack and its burning fuel being damped down with a covering of greenstuff or earth, which may maintain a steady heat for several days. Cooling-off must be equally gradual. It is said that a temperature of up to 800°C can be created in an effective smother fire of this kind—well above the minimum required to drive off the combined water.

Firing has a great effect on the colour of the finished pot. The factors involved are complex and must vary with the constituents in the clay, but the most general rule is that if the firing is carried to a fairly high temperature with a plentiful oxygen supply the clay will fire red (especially if it has a considerable iron content) while if the oxygen is kept away the colour will be grey or black. A well-known demonstration of this is provided by the Badarian and Amratian Egyptian pottery in which the body of the pot was red and the top part black (Fig. 43). This attractive bicolour was secured by standing the inverted pot in ashes that prevented the access of oxygen to the buried portion while the rest of the vessel was exposed.

The Pueblo Indians of New Mexico who make polychrome pottery quite as fine as the Neolithic painted wares of Eurasia fire it successfully without a kiln. On the other hand if it is true, as has been claimed (p. 229), that the Halafians fired their fine pottery at temperatures up to 1,200°C, they must have used kilns. These are likely to have been either cylindrical or beehive-shaped with a furnace either just outside, or directly below a perforated clay floor. In a famous fourth-millennium example from Sialk, however, the fuel appears to have been inside the firing-chamber. Many little family kilns of beehive shape were in use among the Oltenian people of Ërosd. Surprisingly enough rough kilns of turf and stone have been found at Late Neolithic sites on the Hebrides off the coast of Scotland. Possibly their use reflects the Mediterranean contacts represented by megalithic tombs. Kilns have two disadvantages to the primitive potter. They demand quantities of good faggots or charcoal as fuel, and it is difficult to make them large enough to hold anything like the number of pots that can be dealt with in an open or smother fire.

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Of the factors determining the preferred pot shapes, cultural tradition, function and material are obviously the most important. Material plays no great part, save that if only poor or coarse clay is available subtle forms

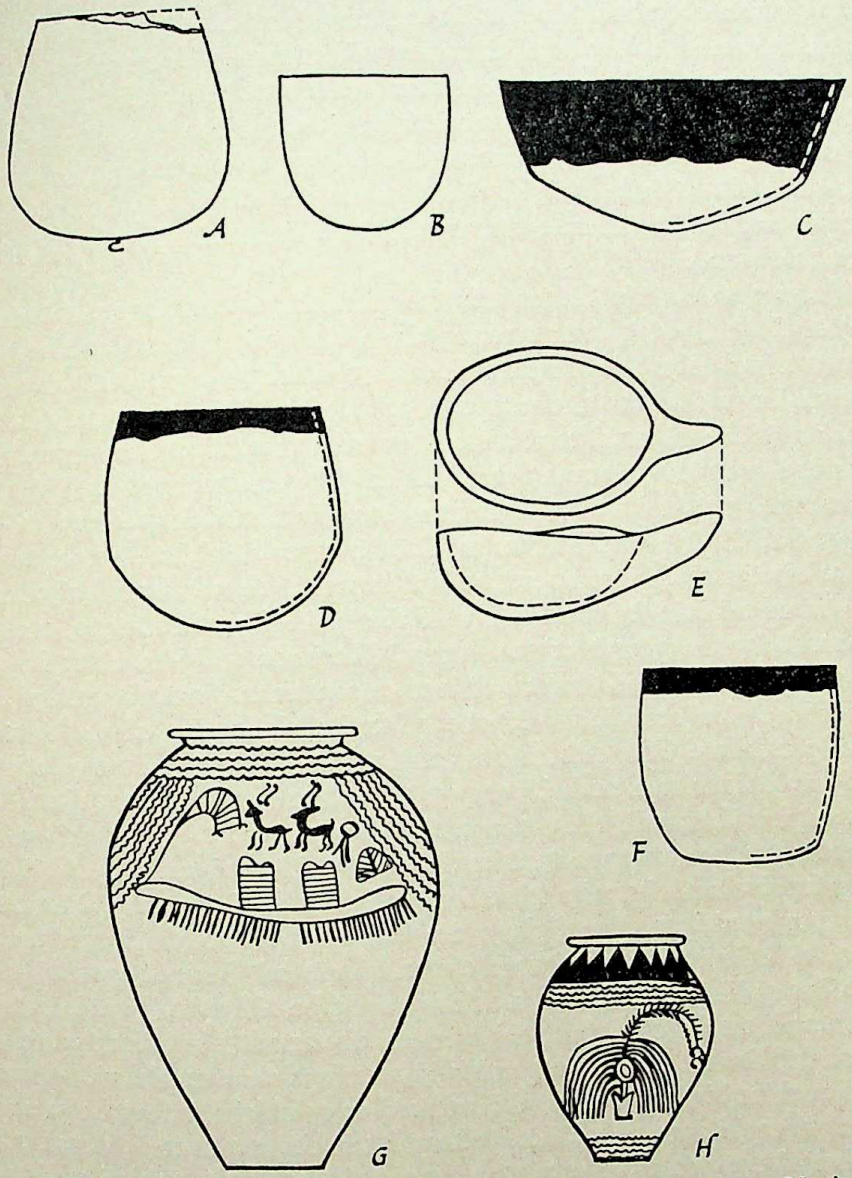


FIG. 43. Neolithic Egyptian pottery. A and B: pots from Merimde; C, D, E, F: Badarian pottery; G, H: Gerzean decorated pottery (after Vandier).

are out of range. As for function, such determination of form as the plate for solid food, the bowl for slops, the beaker for liquid drinks and the constricted-necked jar for water or other storage is obvious enough. Special

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ritual usages determined a number of early forms such as the stand for offerings. Very many Early Neolithic vessels have round or mildly pointed bases. These are somewhat easier to make, for the thickening of the foot ring may give trouble on firing: they are also less liable to break if heated directly over an open cooking-fire. Round bases have no serious disadvantage if domestic conditions are such that they will generally be stood on yielding surfaces. Conversely, the use of tables or dressers would certainly favour the development of flat bases. On the other hand, clay rings on more elaborate supports may be devised to prevent the tipping of round-bottomed pots. The really pointed base such as that favoured by the Ertebølle, and some of the pit-comb northerners, must usually have been intended to be pushed into earth or sand.

Of far greater historical interest is the determination of shapes by cultural tradition. In primitive communities these are quite often based on the imitation of vessels made of materials other than clay—supposedly materials that were in use before the adoption of potting. We have seen that the Danubians often imitated the natural shapes of gourds, and this particular skeuomorphic development is found also in the prehistoric wares of Central and South America. Baskets sometimes served as models, as they did for the Egyptian Tasians and Amratians. On the other hand, leather prototypes (and we have assumed leather to have been used for containers in Palaeolithic times) seem to have inspired many of the plain Egyptian forms, such as those made by the people of the Fayum, Merimde and Badari. It is even more easy to detect the influence of leather containers (including the use of withy hoops for stretching) in the related plain wares of the western Neolithic cultures. The elaborate painted wares of eastern Europe, south-west Asia, Baluchistan and China, on the other hand, do not show any skeuomorphic forms; in them the craft had advanced to a stage at which form followed the best opportunities allowed by the medium (Fig. 44, E, F).

As primitive man happily is seldom satisfied by the purely functional, the tempting surfaces of pots from the first often attracted decoration and the use of colour. Patterns were either impressed, incised, gouged out, plastically applied or painted; incisions might be filled with red or white clay for contrast, or even filled with other substances (birch-bark was used in Neolithic Switzerland). Sometimes impressions were made with natural objects such as bird bones, or with pointed or cylindrical sticks; in western and northern Europe Neolithic potters often favoured cord impressions of various kinds, or used combs to obtain dotted lines. A similar dotted effect could be obtained by the use of a shell with a toothed edge such as the cockle; this cardium decoration was very popular among the earliest Neolithic settlers along the central and western Mediterranean.

The basket-shaped Tasian and Amratian pots also imitate basketry in the weave-like pattern of their white-filled incised decoration following the lines of weaving. Various kinds of incised and gouged ornamentation are

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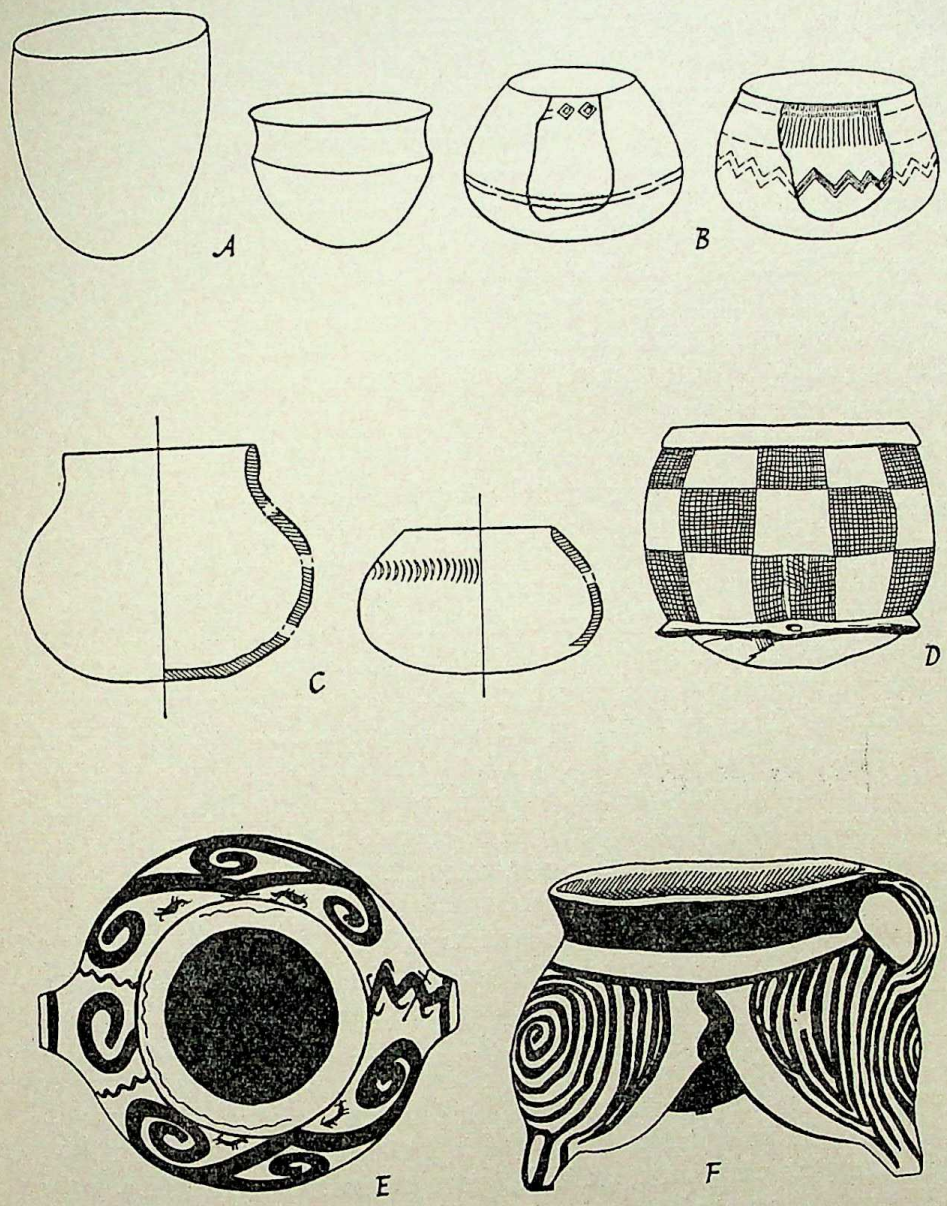


FIG. 44. Neolithic pottery. A: Windmill Hill culture, England (after Piggott); B: incised wares, Stentinello culture, Italy (after Brea); C: Mersin, Anatolia, levels XXVII–XXVI (after Garstang); D: incised ware, Xemxija, Malta (after J. Evans); E and F: Late Yang-shao, China (after Cheng te-k'un).

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found throughout Europe. One of the most characteristic manifestations is the curvilinear ribbon patterns incised on the early Danubian pottery (Bandkeramic). Round the Mediterranean (and often associated with impressed cardium wares) incised patterns were popular with some of the earliest farming communities. The designs are often rectilinear, sometimes curvilinear, and range in execution from fine scratches to broad excised channels. Such decoration is found on the Neolithic wares of Crete, in south Italy, Sicily and most of the other Mediterranean islands as well as in Iberia outside Almeria. Comparable wares are found in many parts of France and Atlantic-coast Britain. In Scandinavia, although the very earliest Neolithic pottery is lightly ornamented, during later phases of the period most elaborate and richly ornate forms of incised wares are characteristic (especially the 'Grand Style', contemporary with the megalithic passage-graves).

It has already been seen that certain elementary colouring effects can be obtained by firing alone. But for more elaborate decoration painting is essential. This was usually done after the pots had been air-dried but before firing. Often the ground colour might be simply the red or buff, brown or black, of the fired clay. But in south-west Asia an all-over slip was often used particularly to obtain a white surface. The use of slips presupposes a great refinement in the preparation of clay, for they are normally made by dipping the vessel in a solution of the finest particles. Slips may be burnished and left plain, but their advantages as a background for painted designs are very great.

The mineral pigments used by the early potters have been little studied; they were probably the various oxides of iron, with manganese for black, already used by the Palaeolithic cave-painters. Changes of colour with firing had to be allowed for.

The decorative art of the vase paintings will be considered elsewhere (p. 331); here it is only appropriate to consider meanings and techniques. Certain of the stylized animal forms found in Asia are thought to have been inspired from copying the angular representations inevitable in basketry, and are to that extent skeuomorphic. Whether painted designs were imitative or proper to the potter's craft, their application was a matter of extreme skill. As far as is known the Neolithic potters (like the modern Pueblo) made no preliminary marking out of their designs but brushed them in free-hand—a difficult feat on the full contours of a pot. From this point of view no Neolithic wares show greater accomplishment than the large, handsome jars of the Yang-shao people of China, with their bold, strong designs covering the entire surface.

Finally it must be insisted that very many designs, whether painted or incised, and whether geometric, or semi-naturalistic, probably had symbolic meanings and magical purposes. In decorating a vessel a woman would be at once showing her skill (there is usually considerable friendly rivalry

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between potters), making her possession more beautiful, and serving some such end as the falling of rain, the growth of plants or the well-being of all and sundry.

## VESSELS OF STONE, WOOD AND IVORY

As the Palaeolithic hunters shaped stone lamps, it is hardly surprising to find that stone was used for containers from the earliest Neolithic phase. At both Jericho and Jarmo although the first inhabitants had no pottery they were carving excellent stone bowls; those from the Palestinian site were made of calcite, while the Jarmo specimens are of variegated stones, some of them quite decorative. The Cypriotes at Khirokitia made fine vessels of polished stone, sometimes using tough volcanic andesite. They liked to enrich them with geometric patterns, possibly deriving the designs from basketry. The al'Ubaidans made some elaborate ritual vessels of stone and were even able to work obsidian for the purpose. In Egypt, where alabaster and other stone vessels were so abundant and beautiful in Dynastic times, the tradition was already represented by basalt vases at El Omari and among the Badarians. The Amratians used alabaster.

Wherever wood was abundant it is likely to have been hollowed into containers, but they have seldom survived. The Swiss lake-dwellers had good solidly made bowls and handled ladles, seemingly hewed out of the piece with an adze and then polished. These ladles may not be unconnected with those that the Badarians of Egypt cut out of ivory; these had both round and rectangular bowls, and handles decorated with animal figures. The Badarians also made little flasks and cylindrical vases out of ivory.

## BASKETRY

Before the beginning of loom weaving, it is difficult to make a theoretical dividing line between basketry and matting on the one hand, and textile weaving on the other. Yet for the early Neolithic period in the Old World it is usually possible to do so in practice; only in the Swiss lake-side dwellings have specimens been found that might almost equally well be assigned to either craft. The best touchstone for distinguishing between them, though it is not infallible, is that textiles are nearly always made from spun or twisted threads, while basketry and matting are commonly made from threads, bast, withies and the like that have not been spun and are quite often in more or less their natural state.

As spinning was itself an invention of some complexity, it appears likely that basketry would have been made before textiles. Probably it was, although the evidence for it remains slight. The coiled rush-mats which left their impressions on the floor of the houses of the second Neolithic period at Jericho must have been made during the seventh millennium BC if the Carbon-14 dating is correct. On the other hand, there may possibly have been textiles in Jericho at this time, as holed stones which could be spindle

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whorls have been found there. Again, some of the Mesolithic peoples of northern Europe had nets and plaited eel-traps and no textiles—but in absolute age these were no older than true textiles farther south. So in the Old World the case for the precedence of basketry is not proven. In the New we shall find it to be much stronger.

There seems little question that like so many other things in the Old World, basketry was first developed in Iraq, Iran, Palestine and Egypt. Probably the second oldest instance after Jericho comes from Jarmo—and again it is represented only by mud impressions. Here the villagers had made woven matting. They had employed the plain weave technique by which either reeds form the woof on a warp of cords, or reed strips are simply interlaced.

For the earliest known survivals of actual specimens of basketry we have to turn to Egypt. In the lake-side settlements of the Fayum the grain storage pits were lined with basketry of a type most unlike the woven matting of Jarmo (Fig. 45). They had been built up by the coiled technique—which may be said to have more in common with potting than with weaving. This method depends on the use of a fairly bulky core, made up of a continuous bundle of whatever material is being used and a wrapping or sewing strip of the same or another substance. The core is then coiled spirally into whatever shape is wanted, each turn being stitched on to its neighbour; sometimes the sewing strip may be wrapped round the core between each stitch. The Fayum bins were made of corn straw, and were mostly 3 or 4 feet across and up to 2 feet deep. In addition to these large containers there were straw mats, coiled basketry lids or platters and one fine boat-shaped basket in which man's irresistible urge to decorate is already displayed. Here the core was of grass and the wrapping thread of flax bast, and the whole was given life by coloured vertical strands interwoven into the walls. At Badari there were more specimens of the coiled technique. Reeds were the preferred material. There were also reed mats made in two manners. One was the simple twine, in which reeds, or slender bundles of reed, are laid side by side and interlaced by two threads that twine between them. The other, the only specimen of this kind of work known for the period, was made by the wrapped technique. In this the sewing thread is wrapped round the reed bundles, going over two and under one.

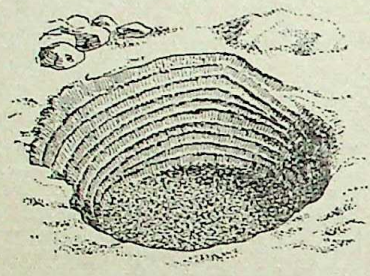

FIG. 45. Basket-lined grain storage pit, Fayum, Egypt. Diameter 110 cm. (after Singer).

The coiled basketry already predominant at the primary Neolithic settlements of Fayum and Badari remained very popular in Egypt and was used for some splendid ornamental work in Dynastic times.

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Looking outside the cradlelands of Neolithic culture, it appears that the Yang-shao people of China were probably both weavers and basket-makers, but unhappily the only traces of their work are impressions on the base of their pots, and from these it is impossible to distinguish the method used—or even to be sure whether the soft clay had been placed on coarse cloth, matting or basket work. However, there is no reason to doubt that both textile and basket-making went with the general spread of the Neolithic way of life through Asia; coiled basketry was being made at Mohenjo-daro.

Turning now to the west, it is to be expected that our best evidence should come from the Swiss lake-side dwellers. The villagers were, in fact, highly skilled at basketry, favouring both the coiled and twined techniques, commonly in flax, though also in bast and rush. Twining was used mainly for bags and was therefore done spirally. An unexpected development in some of the twined material was the introduction of a fleecy nap of fibrous flax; it is not known whether this was intended for mats or for the stuff of thick cloaks. Some coiled twine pieces were padded and the nap was so thick that it has been suggested they came from cushions. Plain interlace rush mats were also made by these domestically well-provided villagers.

In Spain we find the influence of a new material. Here in a very dry cave in Andalusia, people of the Neolithic cave culture, probably rather later in time than the primary Neolithic peoples of the peninsula, had used esparto grass for bags and baskets. This fine material (of a variety that now grows only in north Africa) made very neat and elegant upright baskets; they are thought to have inspired the pottery beakers of the Early Bronze Age.

In Britain and Scandinavia we have as yet no certain evidence for basketry in the primary Neolithic phase—and it will be remembered that the Windmill Hill people do not seem to have made textiles. On the other hand, at a period probably not much later than Skara Brae, the Orkney islanders were making a coarse coiled basketry and twined sedge matting.

It is generally assumed that the basketry of the New World was, like most other American crafts, an independent invention. Indeed, the evidence from Danger Cave, Utah, has led to the claim that twined basketry of quite an advanced technique was already being made in the area by 7000 BC. If this early dating can be confirmed, then it looks as though basketry was invented in America earlier than anywhere else; knowledge of it may even have been diffused westward into Asia. We are on more certain ground for South America. In the dry lower valleys and coasts of Peru conditions are most suitable for preservation, and so we have ample evidence of the excellence of the craftsmen. Basketry was to spread throughout the continent, and be brought to a very high pitch in both form and design; indeed, few would dispute that the most beautiful baskets in the world have been made by the American Indians. The pre-pottery farmers of Peru used sedge, reed and leaf-bast to make mats and baskets. The matting was sometimes twined, sometimes woven with reeds on a cord warp, approximately as at Jarmo.

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In one type of basket, twined walls were built on to a cross-framed base—a very unusual combination. One of these coastal sites has been dated by Carbon-14 to near the beginning of the second millennium BC.

Potting has been revolutionized by the wheel, moulding and other mass production methods. But basket-making remains little changed. It is one of the small but moving reminders of the continuity of our history that nowadays little girls in kindergartens, ladies laying tables in genteel cafés, are handling just the same coiled mats and woven baskets as those made many thousand years ago beside the Nile, by the first hill farmers of Asia and the valley dwellers of the Andes.

## SPINNING AND WEAVING

'Spinning is the forming of threads by drawing out and twisting fibres. The thread has also to be wound, but this is always a separate process, while drawing and twisting are sometimes separate and sometimes simultaneous. Drawing consists in pulling out the fibres lengthwise, which arranges them in more or less parallel order. Twisting is the important factor in spinning.'*

It is possible that this very tricky skill, that had to be mastered before textile weaving became a possibility, had already been tentatively tried in Palaeolithic times. It is true we have no examples of it before the Mesolithic fishing-nets, but conceivably twisted fibres may have been used for bow-strings, sewing skins, or fixing dart-heads, among those Palaeolithic hunters who lived in regions where vegetable fibres were available. However, even if these hunters did make cords, true spinning is most unlikely to have been known to them, and the rapid development of the processes of textile making is one of the most remarkable instances of the great spurt in craft skills that went with the more settled life of Neolithic times.

Spinning must have begun by twisting threads between the hands or against the thigh without the help of any implement, but archaeologically this stage is very hard to detect. The spindle weighted with a whorl was widely used in early Neolithic times. It was probably arrived at by using a stick on which to wind the twisted thread, which might then be used to do the twisting by attaching the fibres and rolling it on the thigh; this primitive method is still in use. The next and most important stage was reached when it was discovered that the spindle could be rotated, then allowed to drop and continued spinning in the air; the duration of the spin could be increased by weighting the spindle with a whorl. These whorls of clay or stone, commonly disk-shaped, conical or spherical, and perforated for the reception of the spindle shaft, are found in use among almost all the Neolithic peoples described in Chapter VIII. It is interesting to find that whorls were never employed by the excellent weavers of the Chicama valley in Peru; some Peruvian Indians still spin with a small, unweighted stick. The Danubians and the Windmill Hill people of Britain do not seem

* Grace Crowfoot, *History of Technology*, Vol. I, p. 424.

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to have made textiles at all. There is no certain evidence for the craft, either, among the peoples of Jarmo and Jericho.

Weaving at its simplest can be accomplished without a framed loom. With stiff materials it can be carried out with the fingers with no kind of bar, but this must usually be regarded as resulting in matting rather than fabric. True textiles can be woven on warps stretched between, say, a tree and the weaver's waist. But the most effective of the very primitive devices, and one that was used among the Badarians and probably other Early Neolithic villagers in Egypt, consisted simply of two bars pegged out horizontally on the ground with the warp threads held taut between them. The woof threads would at first be darned in by hand, but later perhaps first the shed rod would be devised to raise one set of the warps, then the idea of the heddle for raising the other set would have been hit upon. In addition to this horizontal loom, the upright loom with two beams may have been in use (it has been suspected among the Amratians of Egypt), but all our evidence is for another type of upright loom in which instead of a second beam to hold the warp at the bottom, large weights were used to make the necessary tension. This weighted loom (which has almost disappeared but long survived in Iceland) caused the weaver to work at the top of the frame instead of at the bottom as in the double-beam form. Loom weights, usually made of large perforated lumps of clay, are sporadic but widespread among Neolithic cultures. They occur for example at the earliest settlement at Hissarlik (with thousands of spindle whorls), in the Boian culture and then far to the west among the western Neolithic farmers of northern France (Fort Harrouard).

The textile material most often used in Early Neolithic times in Egypt, Asia and Europe was flax. It must have required a period of experiment to work out the processes of retting, beating and scraping—far more complicated than the simple teasing out of wool and cotton. No finds of woollen fabrics have been made for the Early Neolithic phase, but they are extremely perishable and may simply have failed to survive. The Egyptians regarded woollens as unclean for garments, but it is hard to believe that sheep-herding peoples in colder climates failed to make them even if their sheep were not as yet heavily fleeced. Cotton was already being used in early days at Mohenjo-daro, but there is as yet no evidence for it in pre-urban times in Baluchistan. It was known to the pre-ceramic farmers of Peru.

The earliest actual textile remains come from Egypt, and from the same villages that yielded the oldest baskets. A torn scrap of linen was found in one of the Fayum granaries; the weaving is even and the two-ply threads are up to 25 by 30 to the square inch. Many more specimens are from graves at Badari; they were formerly believed to be linen, but are now thought to be of some other, unidentified, plant fibre. One piece has a true selvedge, proving that the woof thread was of considerable length. Both the Fayum and Badarian linen show the simple plain weave with a regular alternation

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of warp and woof threads. All the fine Egyptian linen was in this plain weave until Old Kingdom times. Traces of linen were detected (through contact with copper) in the oldest settlement at Susa and at Sialk in Iran.

In the west, once again the evidence comes from the Swiss lake-side dwellings. Here some of the napped fabrics described under basketry might equally well be claimed as textiles. The ordinary linen is like the Egyptian, a two-ply plain weave; it was even, and the gauge went up to 48 by 37 threads to the inch. These villagers knew many weaving tricks; they made borders woven at right angles to the main run of the cloth, fancy fringes, ribbed bands and a striped effect obtained by jumping woof threads over two warps ('floats'). Unfortunately we know nothing of the contrasting colours that may perhaps have formed part of these ambitious schemes. It is difficult not to regard the inhabitants of the Swiss lakes as particularly skilful and industrious among the Neolithic peoples of Europe; but in fact this impression is probably entirely due to the chances of preservation.

In the New World, the people of the Chicama valley and the coast of Peru were as active at weaving textiles as they were at basketry (Fig. 47); cotton was their usual material, but it was often mixed with a plant fibre; they used plain weave, but almost always combined it with insertions or borders of twined work. They were able to make simple patterns by the use of 'floats'.

## CLOTHES

While vast numbers of personal ornaments have survived from primary Neolithic times, evidence of style of dress is surprisingly slight. Presumably in all the cultures in which weaving was known, linen might be used for clothes. Probably both the peoples of Lower Egypt and the al'Ubaid people had already started the distinctive types of loin cloth and skirt later to be the usual modes in the two river valley civilizations. At Sialk, in western Iran, too, the man shown on the sickle handle was wearing a skirt fastened at the back. The Badarians still dressed in skins, but must have had linen garments as well. The Amratian men seem to have worn very little; they are depicted on some of their pots with feathered head-dresses and penis sheaths. The women favoured linen aprons.

In southern Europe the inhabitants of the Cueva de los Murcielagos, Andalusia, wore woven tunics of esparto grass. North of the Mediterranean lands, clothes of leather and furs must presumably have been used in winter in addition to linen garments. It will be remembered that in the Swiss lake-side dwellings fragments of weaving with a thick flaxen pile may have come from warm cloaks. Until evidence is found to the contrary, it must be accepted that the Danubians, the Windmill Hill people and the first Scandinavian settlers had no textile garments but relied entirely on skins. Buttons were already made for fastening clothing particularly by Mediterranean peoples; in Britain neatly finished shell toggles were probably used as belt-fasteners.

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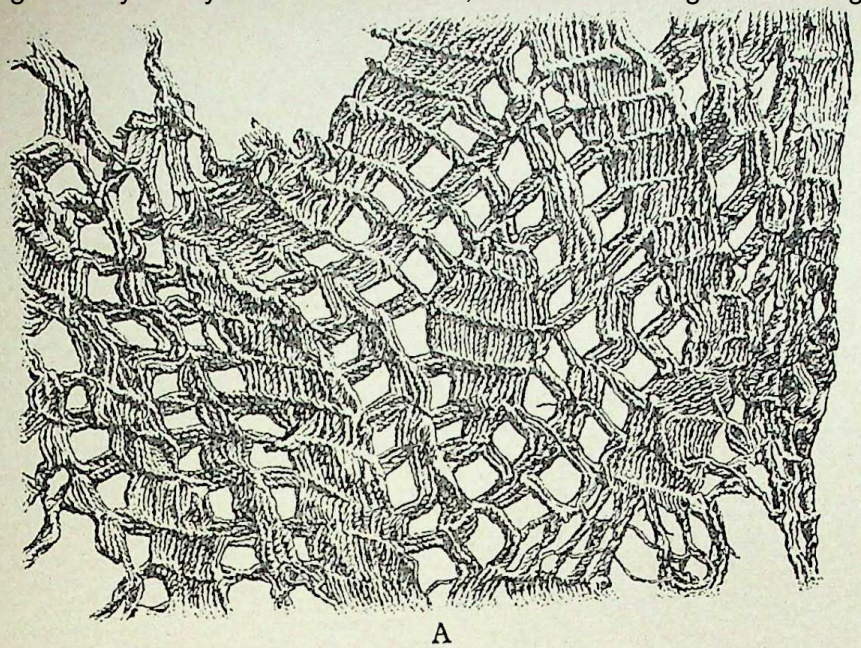

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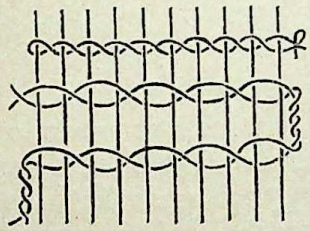

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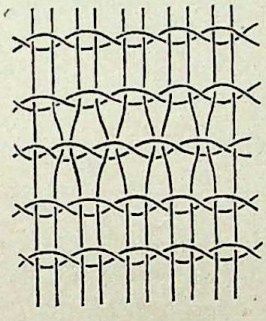

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FIG. 46. Early textiles from Peru. A: patterned cotton from Rio Seco; B and C: two forms of weaving.

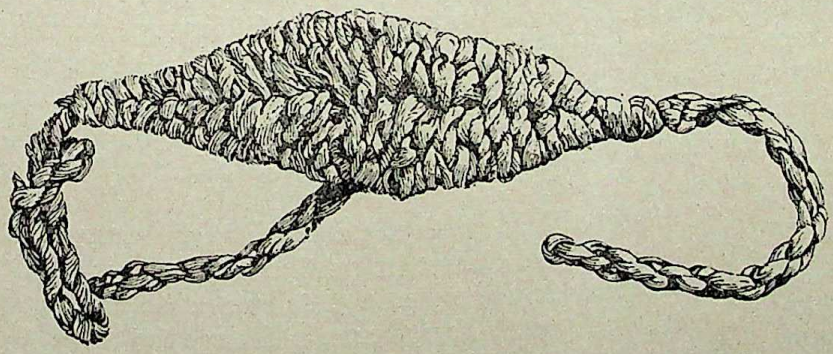

FIG. 47. Early basketry from Peru: sling from site of Asia (Department of Lima, Province of Cañete).

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## FOOD, COOKING AND OTHER DOMESTIC ARTS

Greater variety of foodstuffs and a wider range of methods for cooking them were among the immediate advantages of man's adoption of the Neolithic economy. It is true that the Palaeolithic hunters had been able, in favourable regions, to collect roots, fruits and seeds, but these relatively small and strictly seasonal supplies could not compare with having a corn store, a safe supply of tender meat and, among some peoples at least, one's own fruit trees and vegetables. Throughout the Old World mixed farming, supplemented to a widely varying extent by hunting and fishing, provided a well-balanced diet. In America, where domestic animals were lacking or of less importance, the protein supplied by the cultivated bean must have been of nutritional importance. Unfortunately we do not as yet know whether flocks and herds were milked during early Neolithic times; it seems quite likely that the goat was the first milk-giver.

FIG. 48. Saddle quern in use. Egyptian statuette, Fifth Dynasty (after J. G. D. Clark).

The essential cooking equipment of the Neolithic house was the hearth, and the quern for corn-grinding; in many houses, as has been seen in Chapter VIII, a domed clay oven was also installed. In any megaron or other two-roomed type of house the hearth was usually in the inner room, the oven in the outer anteroom. The hearth might be surrounded by stones or neatly enclosed by slabs as at Skara Brae. Such arrangements would make it easier to support pots being used to boil and simmer. Presumably the fire-proof pots now available were used both for meat stews and for various kinds of porridge and other cereal concoction. Primitive peoples usually make good use of various herbal flavourings, and we can assume that Neolithic man was taking the first steps towards an established herb garden. Salt must usually have been kept in store. The ovens are likely to have been mainly used for baking unleavened bread, but conceivably also for roasting meat. At least there was now for the first time the possibility of a distinction between roast and grilled flesh.

Querns, at which Neolithic housewives must have spent so many hours on their knees, were among the earliest items of their domestic equipment. They were in use already in the earliest settlements at Jericho and Jarmo. Throughout Egypt, south-west Asia and eastern Europe the type known as the saddle quern was employed from the first. This is characteristically a fairly large flattish slab which the friction of the upper stone, pushed steadily up and down upon it, has worn to a gently concave surface. It may be set at a slight

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[Kenyon

(a)

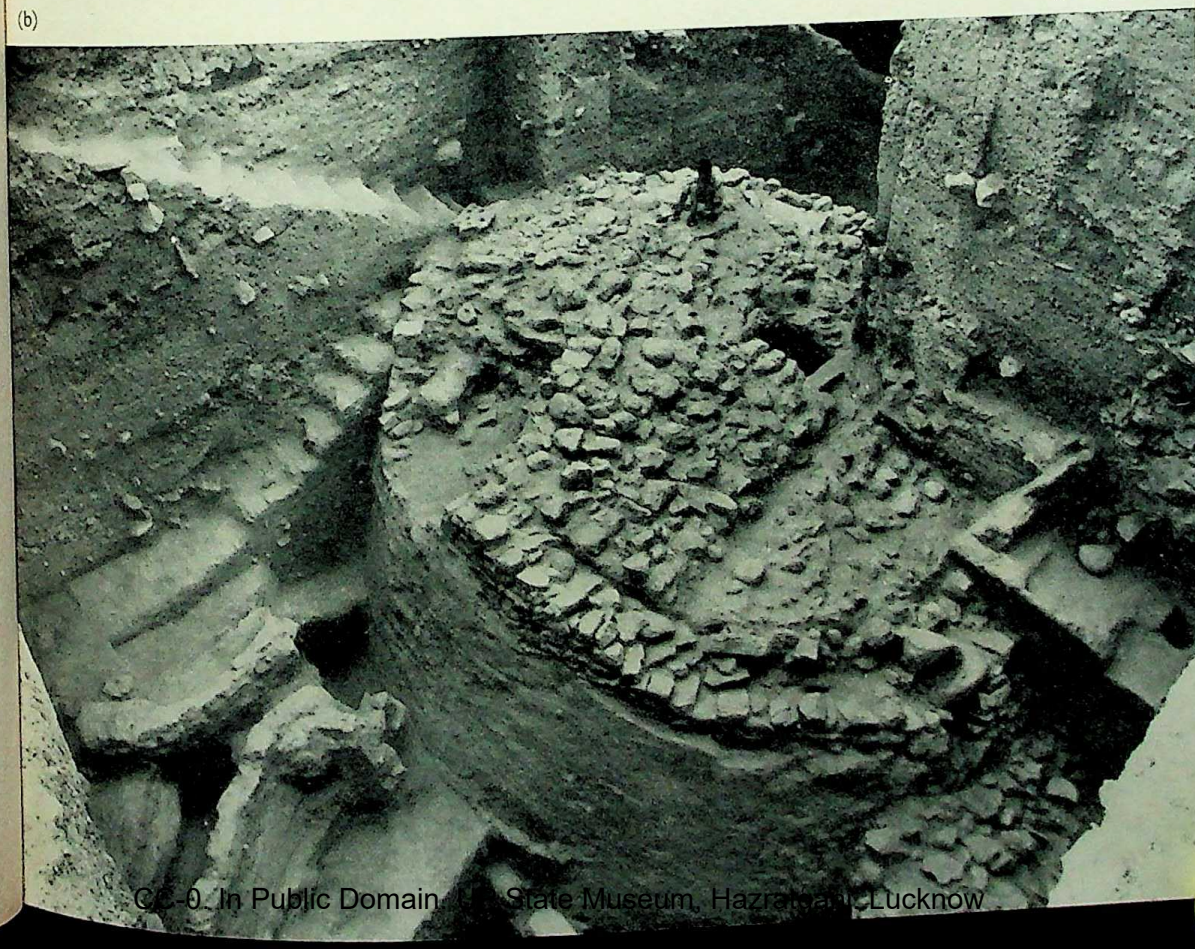
9 *Neolithic Jericho*

(a) *Clay-modelled head*

(b) *The Great Tower*

[Kenyon

(b)



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(a)

[*photo Chuzeville*, Louvre

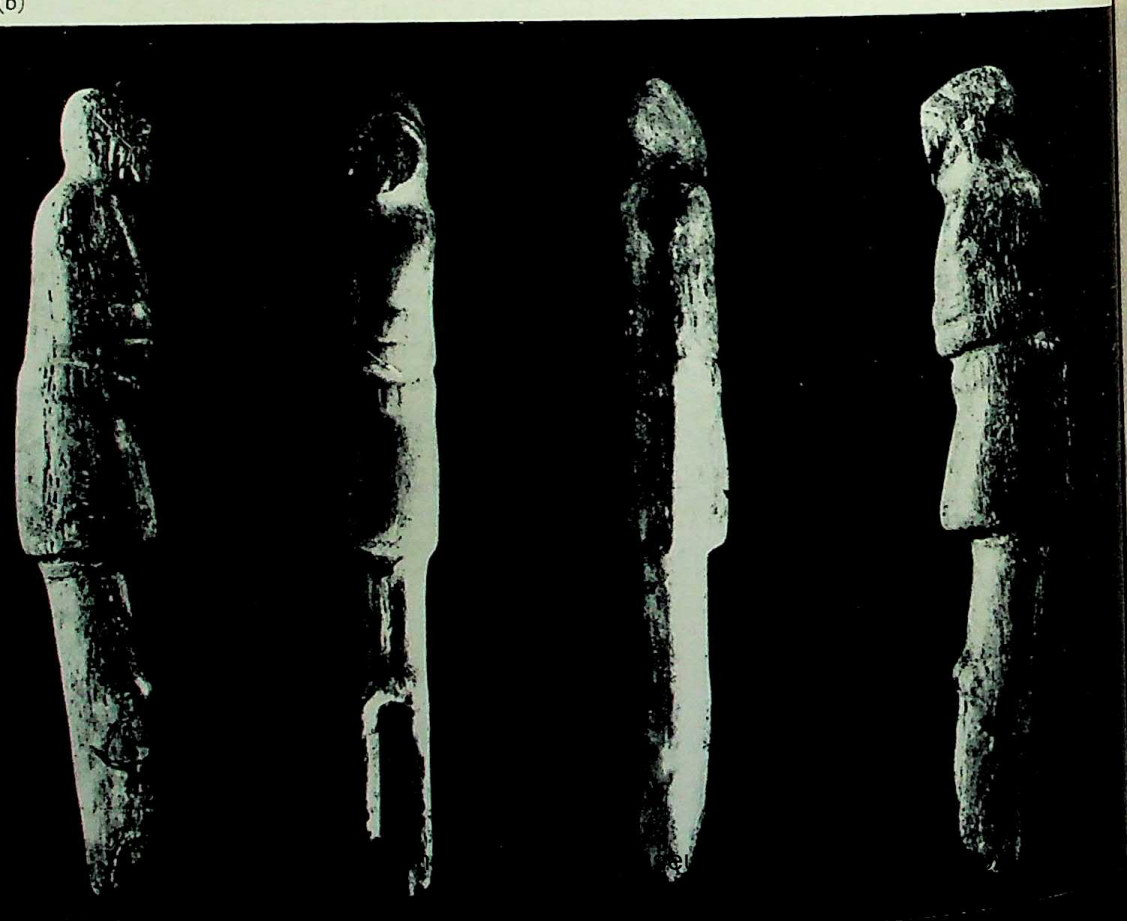
10 *Pre-Dynastic Objects of Flint and Bone*

(a) *Ripple-flaked flint knife blade from Gebel-el-Arak, Egypt. Gerzean culture*

(b) *Carved sickle handle with human figures (Sialk)*

(b)

[*Ghirshman*



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slope, so that as the miller grinds away the rough flour can fall downwards (Fig. 48). In America a similar type still persists in the Indians' *metates*. In some parts of Europe, however (notably among the Windmill Hill people of Britain), a seemingly less efficient quern was in use in Neolithic times. The upper stone was smaller, almost bun-like, and instead of being pushed up and down with a long stroke, must have been moved with a shorter, circular action, for the nether stone shows a well-defined saucer depression at the centre.

There is no definite evidence for the fermentation of drinks in primary Neolithic societies, but as all mankind at every level from savagery to decadent civilization has always been dissatisfied with his state of consciousness and sought to change it by the use of alcoholic drinks (or other drugs), it is most unlikely that the first farmers were an exception. With a regular supply of grain, beer must surely have been brewed. It was certainly already being made on quite a large scale in pre-Dynastic Egypt.

## TOOLS AND WEAPONS

### *Ground and Polished Stone Tools*

Axes, adzes and hammers partly or completely smoothed by grinding are characteristic of primary Neolithic cultures over their entire range (Fig. 49). Very occasionally they may be unaccountably absent, as at Anau. They were of the utmost importance in the new economy for forest clearance and for tilling the soil, as well as for carpentry and other specialized skills. So important were they, indeed, that the nearest approach to industrial and commercial enterprise of the period was undertaken to obtain the best possible raw materials for their manufacture (p. 326). We have seen that tools were being ground and even perforated by Mesolithic hunters (p. 154) but now that sites such as Jericho are pushing back the beginning of the Neolithic techniques in south-west Asia, it cannot be claimed that these (*c.* 6000 BC) were more ancient than the first use of polished tools among farming communities.

Patient labour was involved in their manufacture. First the flint and tough igneous rock which were the preferred materials were percussion flaked or pecked into roughly the correct shape; then either the cutting-edge or (more usually) the whole implement was ground down and smoothed by rubbing it on a suitable rock such as sandstone, probably always with the addition of an abrasive. If, as was not very common, the tool was to be perforated for the reception of the handle, this was at first done by the crude method of drilling from both sides, probably with a bow-drill and an abrasive; it was only in later Neolithic cultures that some kind of cylindrical drill was devised to get a clean, straight shaft-hole. Such straight perforations are found in the equipment of the 'battle-axe' peoples, whose beautiful



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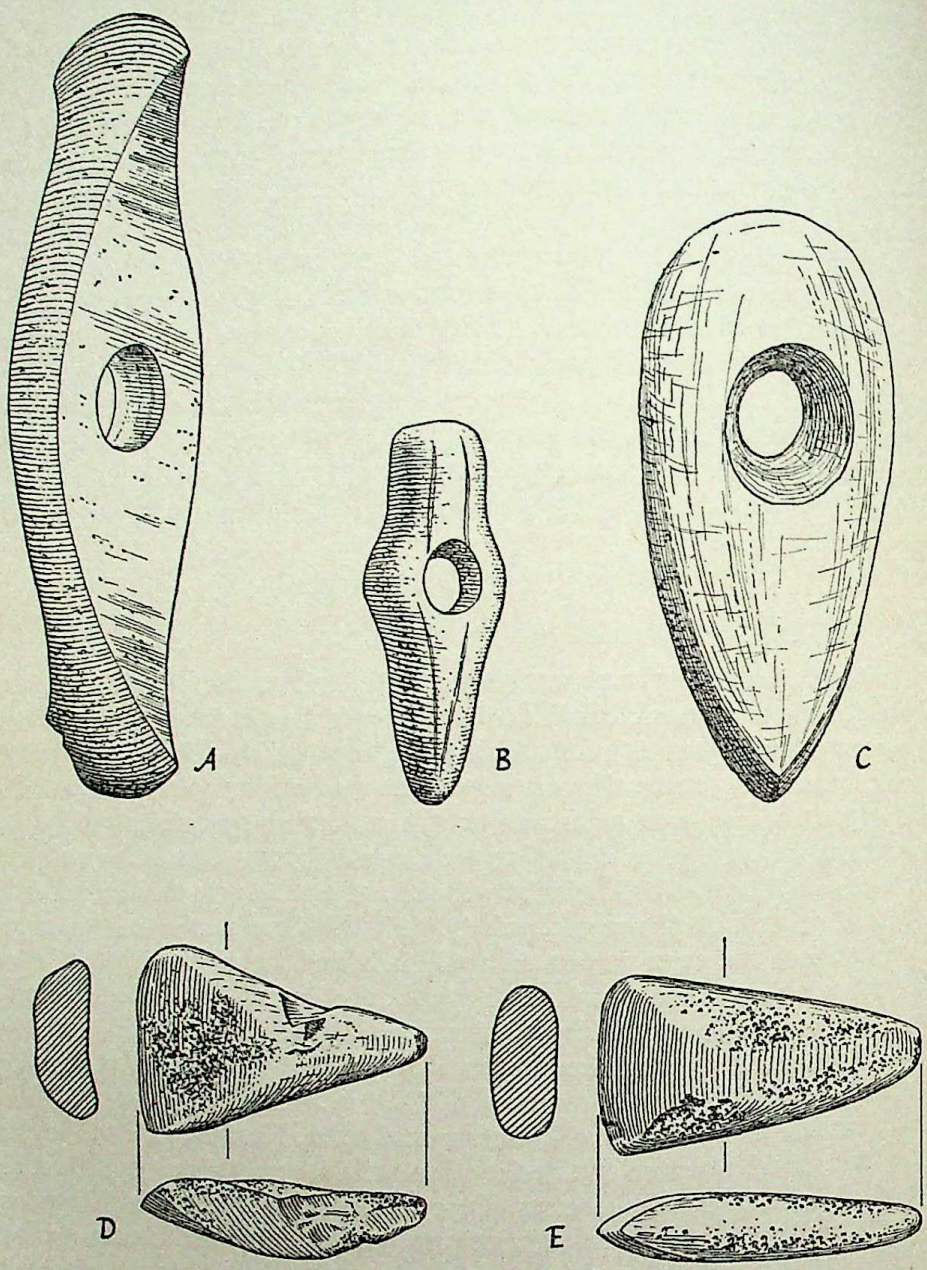


FIG. 49. Neolithic polished stone implements. A, B, C: double-edged axes and hammer axe from France; scale 1/3 (after Déchelette); D, E: stone axes from Brahmagiri, India; scale 3/8 (after S. Wheeler).

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weapons brought the whole technique of the polished stone tool to its greatest perfection.

The two tools that most concern us here are the axe and the adze—both of which, but more particularly the adze, were probably often used also as hoes. The axe, of course, was set with its cutting-edge parallel to the haft, the adze with it at right angles. The axe was symmetrical, usually oval, in cross-section, and thick enough to stand vigorous use against tree-trunks; the adze was normally asymmetrical, probably D-shaped in section and might be much more slender. There was a difference, too, in the mode of their hafting; it was normal for the axe to be fitted into a straight wooden haft (often thickened at the upper end for its reception) while the adze had to be bound into an elbowed handle.

These polished axes and adzes are everywhere so similar that it is seldom useful to try to distinguish between one region or culture and another. Perhaps there is some general tendency for the northern forest-dwellers to make larger and rather finer axes; in later Neolithic times in Scandinavia a square-sided form that was probably derived from metal prototypes was sometimes of gigantic size—up to 30 inches in length. The Danubian culture is characterized by a rather special form that used to be called the 'shoe-last celt'. Essentially it is an adze with a pronounced D section; there is no question that it often served as a carpenter's adze, but it probably also served these agriculturalists for their hoe; in both uses it would have been set in an elbowed handle.

In some later Neolithic cultures specialized tools such as carpenter's gouges and chisels were added to the range of tools in polished stone.

### *Hoes and Digging-Sticks*

Although it has been shown that both adze and axe blades were used as hoes by the early farmers, more specialized versions of this essential implement of small-scale cultivation were also made in a few places. The best-known come from Hassuna (p. 227). They are rather clumsy, flaked from quartzite and sandstone and unpolished; the broad cutting-edge may measure about 15 centimetres across. All taper from this broad edge to a point at the other end, but while some are triangular, others are more pear-shaped; they are moderately thin and sometimes curved between butt and edge. They were hafted with the help of bitumen. Comparable to these Hassuna hoes are some flaked stone hoe-adzes from Sialk; these, too, are normally unpolished although rarely the edge may be ground.

The digging-stick which was probably already in use in Palaeolithic times for getting roots, must have continued in use beside more advanced implements. Digging-sticks can only be detected archaeologically when perforated stones were used to weight them. It is worth noticing that such stones have been found at Jarmo.

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*Sickles*

The other all-important agricultural tool used by the early farmers was the sickle. The Mesolithic Natufian sickles in which small, blunted-back blades were set in the edge of a rib-bone haft have been described (p. 179 and Fig. 50). This type of construction remained popular among the earliest farmers of south-west Asia and Egypt. It already seems to have been in use at Jarmo. There were also more elaborate forms prevalent in the more westerly parts of the region in and round Palestine in which the cutting-edge of each flint was denticulated; sometimes coarsely, as at Abu Usba, Byblos, and in the Yarmukian of Palestine; sometimes more finely as in the early Amouq culture and at Jericho. Simple blades were used at Hassuna, and at Sialk long ribbon-like blades were set in ribs with carved handles extraordinarily like the Natufian hafts.

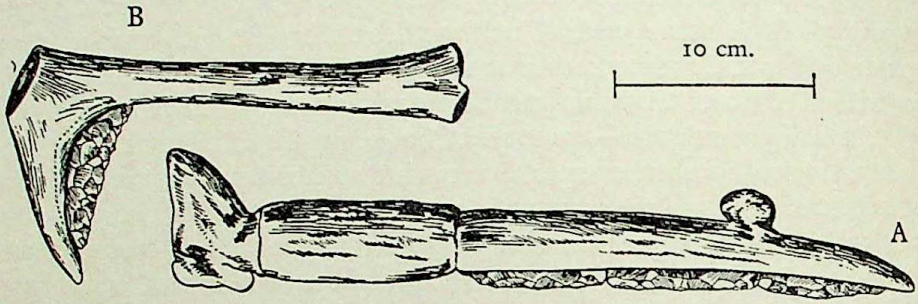


FIG. 50. Mesolithic and Neolithic sickles. A: Natufian bone sickle with animal's head handle and flint teeth (restored), Mount Carmel, Palestine; B: flint sickle, with antler haft [reconstructed, Denmark (after Singer)].

The same straight, composite form was also used by the early farming peoples of the Nile valley; but here the hafts seem often to have been made of wood. The little blades from them are immensely common at Merimde, rather less so at Badari. At the Fayum the denticulated variety reappears—set in a wooden haft. Roughly the same kind of implement was used in Anatolia and south-east Europe. It is interesting to find the denticulated variety identical with that characteristic of the Fayum in use among the people of El Garcel—whose African origin is generally accepted.

The early history of the sickle in western and northern Europe is not clearly established. Probably the oldest known type is that used by the first Cortaillod people of Switzerland. The wooden handle was pointed and the blade was formed by a single flint flake set about half-way up the handle and projecting obliquely upwards. Evidently the haft was tapered on beyond the blade so that it could be turned and used for gathering together the stalks before cutting. Later in Cortaillod times this curious form was improved. The wooden point was now still more slender and curved sideways for gathering, while the flint (or flints) were slotted into the side of the shaft at right-angles to the hook. While this evolved form was undoubtedly more

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efficient, it still demanded two quite separate movements of the reaper; one to gather, the other to cut.

By the end of Neolithic times an implement in which a single flint was set in wood or antler is thought to have been in use in Scandinavia. This crooked form (Fig. 50, B) was near the true sickle shape. For in truth the straight type that served to reap man's earliest crops should not properly be called a sickle but a reaping knife. With its straight edge it did nothing to gather and hold the stalks; the reaper must have had to grasp them firmly in quite small bundles and saw away at them—probably close below the ears. The single, slightly crescentic blade set in an antler in such a way that the tine continued the curve was an approximation to the jaw-shaped sickle which by that time had long been in use in Egypt and Asia. In Britain another variant has been rather doubtfully reconstructed. This again is in one piece, a carefully flaked blade with a curved tip, and it has been thought that it was set at right-angles at the end of a straight shaft. This arrangement would certainly serve to gather the heads, but the cutting-edge would still be wrongly placed. In China and adjacent regions the Neolithic farmers used both reaping knives and sickles made from potsherds and large shells.

One other implement of the true sickle form deserves mention as an impressive example of Neolithic adaptability to local materials. The al'Ubaid people of the lower Tigris-Euphrates had no native stone suitable for making blades. They therefore made sickles of clay, and fired them at a high enough temperature to obtain partial vitrification and a reasonably keen and tough cutting-edge. They probably were not very efficient, but they were easily made and so could be easily discarded when blunt.

*Weapons and other Flint and Stone Work*

The generally pacific temper of societies in a primary Neolithic phase of culture has been insisted upon. It is therefore not unexpected to find no great development of lethal weapons. Furthermore, it is sometimes impossible to distinguish between weapons of war and of the chase, and even between the peaceful digging-stick weight or spindle whorl and the mace-head.

The bow and arrow (Figs. 51 and 52) probably remained the most important and effective weapon—intended primarily for hunting but doubtless sometimes directed against enemies. Many of the old types of arrow-head used by the latest Palaeolithic and Mesolithic hunters remained in use: the transverse edge so useful for fowling, the triangular and the simple tanged forms. There were, however, some improvements, principally in the delicate flaking of barbs to hold the arrow in the wound. The finest of the barbed arrow-heads were those made by the Egyptians of the Fayum, Merimde and Badari; they had no central tang, but long slender wings projecting almost straight backward in line with the shaft. Heads with both tangs and barbs were popular in western Europe, but (an interesting example of how cultural traditions can control such matters) the Windmill Hill people of Britain kept

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rigidly to a simple leaf-shaped form, and the tanged and barbed arrow came into the island only with the Bronze Age.

A hint has already been provided in Chapter VIII of a special cultural significance in the use of the sling (usually with clay pellets as missiles) in south-west Asia. These forerunners of the weapon of David were perhaps the one total innovation in weapons made by the Neolithic peoples. It was made in south-west Asia and was not adopted by the early Egyptian farmers. Slings appear to have been the only weapon employed by the first settled population at Hassuna; they were widely prevalent in northern Iraq and Iran. Round the eastern end of the Mediterranean, on the other hand, bows and arrows or darts seem to have remained in favour. It was the spread of the Halafian culture that brought the sling over the divide to Syria and Cilicia. From here it seems to have spread westward to be adopted in Anatolia,

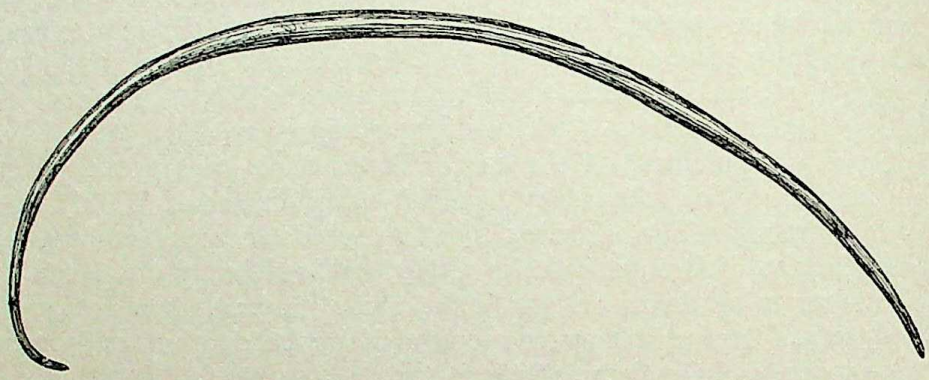

FIG. 51. Neolithic bow from Sutz, Switzerland (about 145 cms).

in Greece and Macedonia, southern Italy and then gradually farther west. The Balearic Islands were to get their name from the fame of their slingers. As a comment on cultural diffusion, it may be mentioned that the sling seems to have been introduced into England only by the Celtic invaders of the Iron Age—when it was fully a weapon of war and necessitated the redesigning of Celtic fortifications. Eastward it early spread into Baluchistan.

Maces were extensively used by the Neolithic peoples of Asia, Africa and Europe; they may have served for the despatch of wounded game as well as for fighting weapons. They were usually made of ground stone with a central perforation for the shaft. The distribution of some of the more distinctive forms is oddly sporadic. A flattish disk-shaped head was favoured by the people of the Fayum and the Amratians; it turns up again among the Danubian peasants and in southern Scandinavia. Spherical and pear-shaped forms were usual in south-west Asia where they seem to have originated, but they were popular also with the Merimdians and were to have a long history in Egypt.

Battle-axes have already been mentioned above as representing the finest

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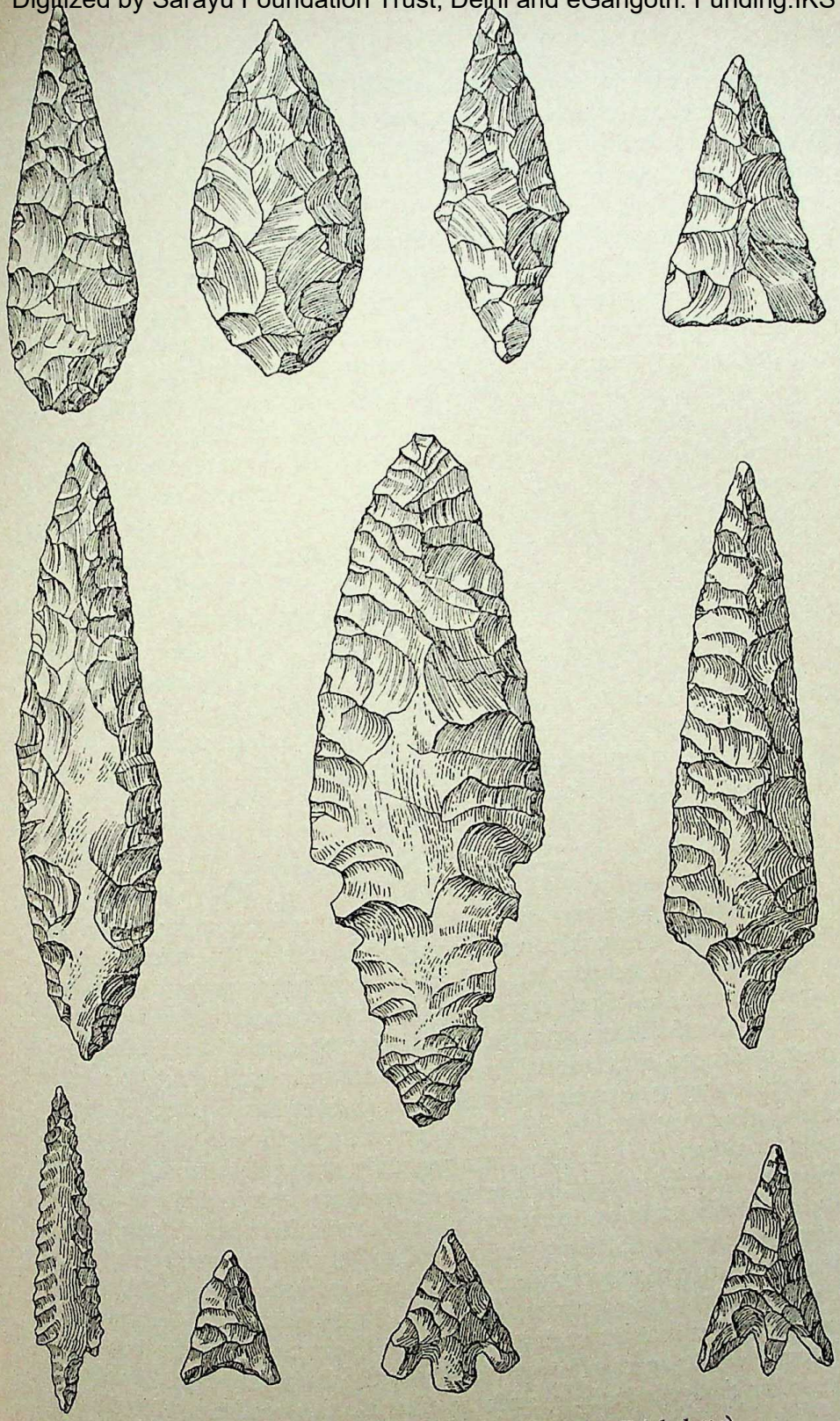

FIG. 52. Flint arrow-heads from France: scale 1/1 (after Déchelette).

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achievement of the polished stone-axe technique. Between the Pontic steppes and Sweden they were developed into a great number of local forms, nearly always of grace and balance. They appear to have been influenced by metal prototypes and do not properly belong to the primary Neolithic cultures (see p. 252).

It is impossible to discuss in detail the many ordinary flint implements that everywhere continued to be made more or less on traditional lines. Varieties of scraper were made everywhere and often in great quantities; they must presumably have remained more important in regions where furs and skins continued to be worn. Some types were used for wood-working. Toothed flint blades were widely used as saws.

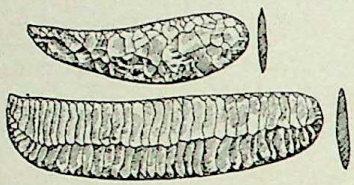

FIG. 53. Flint knives from Egypt (after Singer). A: Amratian; B: Gerzean: 1/5.

Something should perhaps be said of the best flint-work executed by the Amratians of Egypt, for it offers an astonishing demonstration of what the pressure-flaking technique can do at its most skilful—although it was carried to an even further degree of refinement by the Gerzeans. The Amratians already made slender, slightly curved knives of astonishing thinness and long lozenge-shaped blades; also a fish-tailed blade reputed to have been used for ham-stringing animals. These exquisite Egyptian implements can be seen as perpetuating the ancient African tradition for bifacial points (Fig. 53 and Pl. 10, a).

## PERSONAL ORNAMENT

There was no very striking change in the kind of ornaments men and women wore to beautify themselves and display their wealth. Necklaces, bracelets and anklets remained popular, and they seem hardly to have been better designed or more elaborate than the kind of thing already being worn by the Natufians. On the other hand there was inevitably a considerable increase in the sophistication of individual beads, pendants and the like and the materials from which they were made. There is some contrast here between the ancient centres of farming and the rest, for whereas in south-west Asia, Egypt and adjoining regions such articles were generally artificially carved, often from rare and precious substances, the more primitive folk in Europe, although they, too, had a variety of carved beads, still made free use of natural objects and particularly shells. Even the Danubians, it will be remembered, maintained their liking for spondylus. There was naturally a great decline in the popularity of teeth as ornamental objects, for the successful hunting of big game no longer brought such high prestige. Nevertheless boars' tusks were fashionable as far apart as Egypt (Merimde), the Swiss lakes and Scandinavia.

Another change is in the prevalence of amulets as pendants. A widespread

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axe-cult (p. 340) seems to account for axiform amulets, commonly representing the ordinary 'polished axe'. They were worn at Merimde, by the Neolithic Cretans, in Malta, Sardinia and round the Atlantic coast—although in this more westerly part of their range they seem to have been fashionable at about the time of the Megalithic diffusion rather than among the primary Neolithic settlers. Another kind of pendant very popular in France among western Neolithic peoples is a perforated stone arc—possibly derived from a boar's tusk. Somewhat macabre amulets, made from the skull-bone disks resulting from trephining, were worn in the south of France and by the Cortaillod Swiss.

The natives of any region that had an attractive local material might exploit it for beads. Along the Nile ivory was much sought after. In Brittany the bright green caläis was popular and widely traded—but this was in Late Neolithic times; more important here is the famous Danish amber, found so abundantly on the coasts of western and northern Jutland. This was later to supply one of the most important trades of prehistoric Europe, but already the Neolithic farmers were evidently not merely gathering it individually but hawking beads in the local market. Hoards of up to thirteen thousand have been found in the northern bogs.

At the Fayum and Badari and among the Amratians disk beads cut from ostrich shell like those made by the Capsians (p. 164) remained in fashion. As emerged in Chapter VIII, many of the peoples in both Egypt and south-west Asia who were still in a Neolithic stage of culture used copper, probably always native copper, for beads and other trinkets. Another small Neolithic innovation was the wearing of ornamental combs in the hair; the Badarians and Amratians were able to cut theirs from ivory, while in the Swiss lake-side villages they made do with wood. The Amratian women may have worn them in wigs. The Badarians wore stone nose plugs, and comparable objects found in south-west Asia may have been worn in an equally uncomfortable manner.

In addition to trinkets, we have to consider make-up as a universal form of self-ornamentation among mankind. The only evidence for it that we have among truly Neolithic societies comes from Egypt. The Badarians were already importing malachite for eye-paint from Sinai or Nubia and grinding it on simple palettes. Among the Amratians these palettes were already being given decorative forms (animals were most popular) that would lead up to the superb artistic productions of the pre-Dynastic Age. Malachite (copper carbonate) was undoubtedly first sought as a protection against eye diseases—the name for the palettes is associated with protection—but equally surely the alluring effect of green eye-shadow was early appreciated.

It is not easy to sum up so scattered and locally particular a subject as this, but it is possible to distinguish two principal themes. One is that in the Neolithic economy personal ornaments and make-up, or the material for them, were the main items of long-distance trade. Then as now people liked



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exotic material for their necklaces and bracelets and by one means or another contrived to get them. Thus gold, copper, ivory, turquoise, carnelian, amber, caläis and many other substances attractive for their colour or glitter were being hawked about the Old World before the end of Neolithic times.

The second theme is that throughout the Neolithic cultures of the Old World the advance from the very first primary Neolithic stage to the next (which, of course, took place at widely different dates) saw a rapid increase in sophistication in these matters. The Ubaidans and Amratians on the one hand, the peoples of the full Megalithic period in Iberia, France and Scandinavia on the other, were far more richly and elaborately decked and arrayed than their predecessors. In this as in more important matters they were already developing towards the full flowering of their respective ages of Bronze.

## MINING, TRADE AND TRANSPORT

Because the heavy axe, usually polished, was the most important tool essential to the Neolithic economy, exceptional effort was directed towards its production and distribution. Most remarkable among these activities were the quarrying and mining of the necessary raw materials: hard (usually igneous) rocks and flint. Our knowledge of mining and quarrying, the first undertaking by man that can properly be called industrial, comes very largely from Europe. The most highly specialized of these industries was flint mining by means of deep shafts sunk through the chalk to reach the flint nodules layered within it. Nodules obtained in this way were not only larger but fresher and more readily worked than surface flint. Mines have been recognized in Sicily, Portugal, France, Belgium, England, Denmark, Sweden, Poland and Bohemia.

Where it has been possible to recognize a chronological sequence, the earliest shafts have been simple pits, while later the miners learnt how to drive galleries along the seams, leaving columns of chalk to support the roof in lieu of pit-props. The shafts might be as much as 12 metres deep; sump holes were sometimes sunk near their foot to collect rain-water, and occasionally there were even such conveniences as wooden steps. The miners had their own kit bags; the commonest tools were picks made from the shaft and brow tine of red-deer antlers, shovels made from shoulder-blades (ox, deer and pig), and wedges from antler tines. Flint axes were also used, and at Spiennes in Belgium rough flint picks. Antlers with tines left to make two-prong rakes were used for drawing back the rubble. The dark galleries were lighted by chalk-cut lamps, and the nodules seem sometimes to have been bagged and then drawn to the surface with ropes. At some sites, such as the famous Grime's Graves in eastern England, there were hundreds of shafts, and each shaft involved shifting up to five thousand cubic feet of chalk. In short, this was a skilled and specialized industry.

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Once mined, the flint implements were roughed out on the spot. Usually axes were flaked to approximately their final form, only the grinding and polishing being left to the purchasers; this reduced the weight and bulk of the goods to be transported. Occasionally (notably in Denmark) the working-up was not carried so far, and flint was traded in the form of shapeless bars.

In some areas, such as the island of Rugen and in Denmark, excellent flint lay on the surface and workshops developed to exploit it. This method of working is exactly paralleled by the known factories for stone axes, several of which have been identified in western Britain (Wales, Cumberland and Northern Ireland). Here again the axes were brought up to the state at which only grinding and polishing was needed. Generally the workers do not seem to have undertaken any actual quarrying for their raw materials but used scree or flakes struck from boulders. In Cumberland there is some evidence for the existence of 'middlemen' working away from the quarries, who polished the axes before they were traded farther afield.

As has already appeared in Chapter IX, it is impossible to be sure of the social background to this specialized trade and industry. It is hard to believe that the workers of the more elaborate flint mines were not specialists, even full-time specialists. On the other hand it is not impossible that members of agricultural communities went to the mines in off-seasons to dig their supplies for the year. Really large hoards of axes such as would represent a professional merchant's stock have been found in Denmark and northern Sweden. In Britain there is evidence that the transport of the stone axes was in the hands of the native, pre-Windmill Hill people, who were not fully settled agriculturalists. Undoubtedly, however it was effected, the axes travelled far within the British Isles and beyond. Specimens from North Wales have been found in the Channel Islands, from Northern Ireland and Cumberland in considerable quantities in southern England.

Attention has been concentrated on the axe trade, because it is typical of the Neolithic economy. Other flint forms were rarely involved in specialized industry, for small tools could always be made by every family for itself. At Grand Pressigny in central France, however, a readily worked and pleasingly honey-coloured flint was shaped locally into long, elegant flakes that were exported widely in western Europe. This trade began only towards the end of Neolithic times and reached its height as part of the expanding trade of the Bronze Age.

Nowhere else has Neolithic trade and industry been so exactly studied as in these western extremities of the farming economy. Much less is known about sources of raw materials elsewhere. The Danubians were largely self-sufficing, but they too had sometimes to depend on foreign materials. For example the green schist used for the familiar hoe-adzes at Köln-Lindenthal had been brought over sixty miles; lava for querns was imported into Belgium from Mayen in Germany; Russian flint from the Valdai region was exported to Finland; implements of green schist from Carelia to western Finland and

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Estonia. Egypt was well supplied with excellent flint, but in various parts of the Mediterranean and over south-west Asia there was a network of trade in obsidian; it was already being imported by the villagers at Jarmo.

Thus although our knowledge of the processes of trade are sketchy, we can see that the basic self-supporting economy of each Neolithic community was already being broken by an import of tools, or raw materials for them, superior to what was available locally. No community (before the settling of the lower Euphrates) was wholly dependent on such imports. If for any reason supplies failed, they could get on very well without them.

The luxury trade in precious and decorative substances, usually for ornaments, has already been discussed (p. 325).

*Transport*

It has been made clear that ridgeways and valley tracks must have existed in Neolithic times though we know practically nothing of them. Similarly there must have been simple vehicles both for transporting produce about the farm and for travelling longer distances, even although man's, and more particularly woman's, back no doubt still bore most of the burdens. Before the invention of the wheel the simple two-pole *travois*, developing into the hardly more complex slide car, was the vehicle most likely to have been devised. Slide cars still go bumping down the hillsides of northern Italy and along the Irish lanes. No evidence for their existence (unless it is the Maltese tracks, p. 298) has come down to us, yet it can hardly be doubted. In the northern forest lands the use of the sledge continued (p. 178) and the sledges themselves were improved. Skis also came into use, doubtless mainly for hunting expeditions. In Egypt the Amratians were probably already using the donkey as a pack animal.

By far the easiest, least exhausting highways were offered to primitive man by water—rivers, large lakes and navigable coastlines. There is abundant proof of water traffic in primary Neolithic times, yet few boats survive. The Nile must have been the first river in the world to carry much traffic. Probably rafts made of bound reeds came first, but already the Badarians had boats that had been developed beyond the raft stage, and the Amratians made a very buoyant and practical craft out of long bundles of papyrus lashed together. They were large enough to support two cabins amidships and might be rowed by up to eight pairs of oars. On the Euphrates the men of the al'Ubaid culture were probably the first regular navigators of the river, and by the end of the period had already adopted sail. A model found in a late al'Ubaid grave at Eridu represents the oldest sailing boat known in the world.

Traffic had become considerable in the Mediterranean in early Neolithic times; we have already noticed the peopling of many islands at this time and evidence for shore-line contacts of all kinds. Obsidian must have been carried by boat. Probably these sea-going vessels were wooden—as some undoubtedly were in the more northerly and westerly part of Europe. Here the dug-out

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canoe, already thought to have been in free use in Mesolithic times, was the usual form. They have survived in German marsh sites such as Federsee, in Danish bogs (notably Aamosen), in Finland and in the Swiss lakes. Already the dug-outs from Aamosen and Federsee show a careful streamlining of the prow.

Unhappily we have practically no knowledge at all of the use of a quite different type of vessel that must almost surely have played an important part in water traffic in Neolithic times. Boats of one kind and another made of skins stretched over wooden or wicker frameworks survive over much of the Old World. The only scrap of archaeological evidence comes from northern Norway, where rock carvings appear to depict this coracle (*curagh*) type of boat. In north-west Ireland the fishermen still use a kind of high-prowed coracle that can ride heavy Atlantic seas. Probably boats of this coracle type would have been more suitable than dug-outs for the long and dangerous voyages that must have been made to settle the Hebrides, Orkneys and Shetlands; they may also have had some share in the traffic along the Atlantic coasts from Portugal to Scandinavia.

## NOTE TO CHAPTER XI

1. See p. 259, note 1.

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CHAPTER XII

# ART AND RELIGION

## ART

In no department of life is there a more complete break between the Palaeolithic and Neolithic traditions than in artistic creation. It is true that schematic drawing and geometric design were beginning to emerge at the end of the Palaeolithic Age in Europe and were continued in the very undistinguished decorations of the Mesolithic peoples, but if what is best and most characteristic of the two traditions be compared they are utterly unalike. The hunters created pictures of an inspired realism, the early Neolithic peoples decorated surfaces with geometric patterns or highly formal or schematic renderings of natural forms. One art was expressive and full of emotion, the other abstract and decorative.

In only one important manifestation was there continuity between them. That was in the models and sculptures of the Mother Goddess, the form in both traditions that was most cultic and religious. Even in these figures there was characteristic difference. The best of the Upper Palaeolithic examples, in spite of their stylization, still show a sensuous response to the female body; the Neolithic figurines have lost this sensuousness, and either show a formal plastic design derived from the female form or are mere grotesques.

The leading reasons for the break must be historical change, unique and unpredictable, and the revolution in man's way of life that divides the two periods economically. That the end of naturalistic art was in part due to the mysterious workings of history, as particular and unrepeatable an event as the decline and death of any great artistic tradition, must be accepted. At the same time it is evident that the rise of the new abstract art was in part due to the conditions of the more rhythmic, settled farming life.

The only primary Neolithic achievement that is first-class even within the limitations of a purely decorative art is ceramic. In both shape and decoration the best of the Asiatic and Egyptian pottery is as good as any that has been produced since. The only other medium in which work of any real merit was produced was that of rock engraving—and even this does not belong to the primary Neolithic phase. The best of the geometric enrichments carved on the slabs of megalithic tombs in Brittany and Ireland are powerfully impressive and can inspire some aesthetic response, while the sculpture of the Maltese temples is very effective indeed. Some of the Mother Goddess figurines in the Neolithic tradition have considerable formal beauty; in their contrasting ways the huge masses of the Maltese Goddess (Fig. 55B) and the

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bare austerity of the best of the Cycladic examples can be admired (Pl. 7, b). But even less than the stone engravings do these belong to the primary Neolithic cultures of their areas. Certain of the Amratian types with arms upraised in a manner suggestive of a barbaric ancestress of the famous Minoan Goddess have tautness and vigour. So, too, have some al'Ubaid figures.

Only an occasional little carving might be seen as giving promise of the revival of a representational art with the rise of the great river valley civilizations. And here it is perhaps significant that Egypt has much more to show than south-west Asia, as though presaging the superiority of her naturalistic artists in Dynastic times. Some of the small carvings of birds and beasts that ornament the tops of Badarian and Amratian combs and ladles, as well as their theriomorphic slate palettes and amulets, give a faint hint of what was to come. In Asia the little peasant from Sialk is the only work that can aptly be compared with them (Pl. 10, b).

It remains to consider the unique phenomenon of the clay-modelled skulls from the second Neolithic settlement at Jericho (Pl. 9, *a*). A few of these have the fleshy part of the face built upon the bone with some feeling as well as deftness; the rest are no more than barbaric daubs. Great artistic importance has been claimed for these curious relics, but it can hardly be substantiated. Their magico-religious interest is very much greater.

Ceramics, then, have the chief claim to attention among the artistic creations of early Neolithic peoples. This in itself presents a striking difference from the Palaeolithic Age: it has never been doubted that cave art was created by men, while the pottery was both shaped and decorated by women. One authority, indeed, has claimed that it is entirely expressive of the sex: for him it is 'a strictly limited mode of art, but within its limits healthy and efficient, pleasing by reason of the industry displayed and its external decorativeness—the expression of the female spirit in art'.* This is very largely nonsense. Almost exactly the same decorative merits are found in the La Tène art of the Celtic Iron Age in Europe, a virile art in a warlike society. Nevertheless the fact that the artistic crown does pass briefly to women in this period is clearly expressive of the fact, already established on other grounds, that the phase of primary farming gave women a great part to play and a high status.

It is not necessary to make a detailed analysis of ceramic styles; they can be more tellingly revealed by photographs. Potters of the Nile never had much talent for decoration; the virtue of their best work lies in a fine mastery of form. This is true, in a humbler way, of all European pottery which had any virtue at all. Only in the megalithic phase did the Scandinavian potters achieve an incised decoration that has great formal strength in spite of its rigidity (the 'Grand Style' of the passage-grave phase). Among the painted pottery, in which Asia excelled, the Tripolye, Oltenian, Yang-shao, Halafian

* Hoernes in *Urgeschichte der bildenden Kunst Europa*, p. 40.

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and al'Ubaid are all of high merit. Some of the Baluchistan upland village designs are also excellent, but one is doubtful which can properly be included in the primary Neolithic phase (Pl. 8, a). It is a rather curious fact of distribution to find that while the Halafian, al'Ubaid and also the Baluchistan pottery painters nearly always built up their designs in panels, often strictly framed panels, those at the two geographical extremities, the Tripolye and Oltenian cultures in the west, the Yang-shao in the east, shared an ability to cover the whole vessel with continuous pattern. They also have in common a fondness for bold spirals. The Yang-shao peasants probably commanded the greatest range of designs; in a single grave in Kansu there were jars with straight geometrical panel designs, curvilinear medallion composition, repetitive motives in bands and the dynamic all-over spiral forms already described. The pot shapes, on the other hand, are of limited range (Pl. 8, b).

The use of the spiral in Neolithic decorative art demands special mention, particularly as it occurs both on pottery and in stone carving. It was not new, for it had already appeared, though very exceptionally, in Magdalenian times (p. 203). The Yang-shao manifestation lies in total isolation, but the use of the motif by the peoples of the Black Earth (Oltenian and Tripolye) is part of a wider cultural tradition, shared between them and the Morava-Danubian peoples and by others (rather later) round the Aegean (Fig. 54). It was to have a superb flowering in this region among the Minoans. The Danubian peasantry carried the spiral and meander designs (engraved on their gourd-inspired pottery) right across Europe. Meanwhile from the Mediterranean focus it can be assumed to have spread to Malta, where it appears in magnificent strength on temple walls (Pl. 11, a). It was carried westward apparently with the megalithic movement; it is not by any means universally associated with this architecture, but finds what is certainly its most striking manifestation in Ireland. Here a number of tombs (outstanding among them the passage-grave of New Grange, Meath), have spiral designs incised on their stones. The great spiral-covered stone lying before the entrance to the New Grange tomb is a handsome and even awe-inspiring monument (Pl. 12).

Although potters may have employed the spiral with only confused ideas about its meaning, the conspicuous use of the motif in temples, tombs and grave furniture (Yang-shao) confirms the general probability that it had a symbolic meaning. It is easy enough to derive it from plant tendrils or coiled basketry, and these may have contributed to its origins. Yet undoubtedly it came to have meaning as a symbol, and the meaning is likely to be that of endlessness—of eternity.

This raises the general question of the possibility of symbolic meaning in the decorative art of Neolithic times. A sharp distinction has often been made between the secular art of the Neolithic potter and the sacred art of the tombs and idols. One authority has claimed that 'with the separation of sacred and profane art, artistic activity in the Neolithic age probably passed into the

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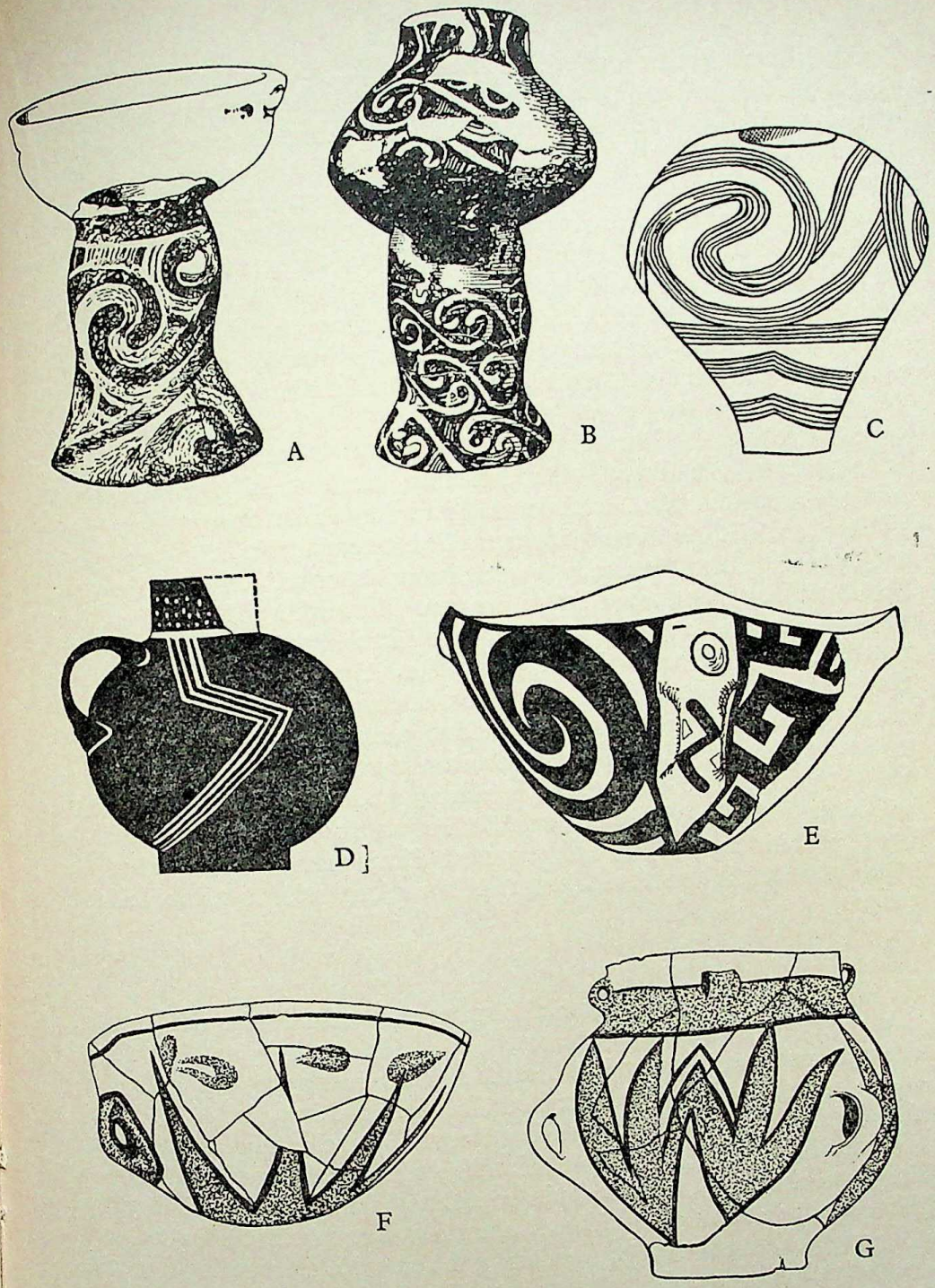


FIG. 54. Neolithic painted pottery from Europe. A: Ërosd; B: Cucuteni; C: Tripolye A (after C. F. C. Hawkes); D: Sesklo; E: Dimini (after Childe); F: Stentinello culture, Megara, Hyblea, Sicily; G: Aeolian Neolithic II, from Lipari, Sicily.

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hands of two different groups'.* This is not likely to be any more true than it was of the 'cave' and 'home' art of the Palaeolithic hunters. Undoubtedly the spirals would have been carved on tombs and temples, and painted on vessels intended for interment with the great dead, with more solemnity of purpose than a woman would have given to the decoration of pots soon to be broken in the kitchen. Yet, as the spiral serves to show, the two could be united, and it is very likely indeed that many of the standard motifs found on such formal wares as those of Halaf and al'Ubaid had their exact meanings and served to bind the household utensils into the general pattern of cultural life of their owners. This is certainly true of the aesthetically comparable, and equally non-representational, ceramic art of the Pueblo Indians of New Mexico.

It would be an excellent thing to be able to draw together all the clues that have by now been discovered and make a statement as to why the early Neolithic peoples had the artistic traditions they did and why they were so unlike those of their hunting ancestors. But cultural traits, and particularly art forms, are not amenable to such logical analysis, nor are they fully determined by economics or social structure. The most one can say is that the peasants had lost the excitement, the intense sensuous observation of nature, the immediate magical urges and the religious wonder at animal life that inspired the hunters. Perhaps, too, their unconscious mind was less often stirred in their quieter, more routine way of life and so was less able to inspire high imaginative art. One can say also that a perfectly successful but unambitious decorative art, showing tremendous talent but little individual genius, might well be expected in peasant cultures in which women (or the feminine principle) were powerful. Clearer understanding of artistic motifs may come from a consideration of the religious forms of the Neolithic peoples.

## RELIGION

In writing about religious beliefs known only from material remains, Scylla and Charybdis lie before one. One may either imagine too much of the emotions and ideas involved in the beliefs, or one may be wrecked on the meaningless description of objects. In the Neolithic period in particular, there is the added difficulty of trying to reconcile such evidence as has been discovered with the religious beliefs and divine pantheons that emerge in the dawn of history. This, as will be shown, is a very real difficulty, for there seems in fact to be a deep difference between the two, due, one can only suppose, to the new conceptions that rose with great ruling dynasties and priesthoods. It might almost be said that there appears to be more continuity with the preceding religious ideas of the hunting peoples than with those of the succeeding urban societies: the exact reverse of what has just been observed in artistic relationships. It would in fact be going too

* Hauser, *The Social History of Art*, p. 40.

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far to say this, yet there is enough truth in it to counteract any easy assumption of economic determinism. The adoption of farming life must from the first have modified religion in changing man's greatest desires, but it made no complete break.

First of all, what was said in Chapter VII about the daimonic view of the universe, and about the roots of myth, magic and religion, is applicable also to Neolithic times. It is sometimes claimed that the Palaeolithic hunters were entirely devoted to magic and that true religion came only with the adoption of farming. This cannot be justified. Modern hunting communities, though they may not often recognize high gods, know powerful religious emotion, and, as has been shown, there is good reason to believe that similar feelings possessed our Palaeolithic forerunners. It can, however, be agreed that the life of the husbandman strengthened particular religious tendencies. The hunter's desire for good hunting was both active and immediate; the farmer consigning grain to the earth had to wait long and passively for his harvest. Such helpless patience was bound to heighten the attitude of dependent supplication. Also the regular cycle of the seasons may not only have changed the pattern and objectives of the ritual year but also have encouraged a belief in powerful divinities as the originators and controllers of such a mighty order. Certainly, too, agriculture roused an altogether new interest in the sun, rain and earth.

What in fact provided the strongest and most definite bond between the Palaeolithic and Neolithic religious impulses sprang from their common desire for fertility. It has been seen that although Palaeolithic religion may have been very much bound up with totemistic animal cults and hunting magic, the most developed and clearly defined cult objects to have survived are the Mother Goddess figures and carved phalli. In the primary Neolithic cultures these two fertility symbols are still absolutely dominant. An axe cult

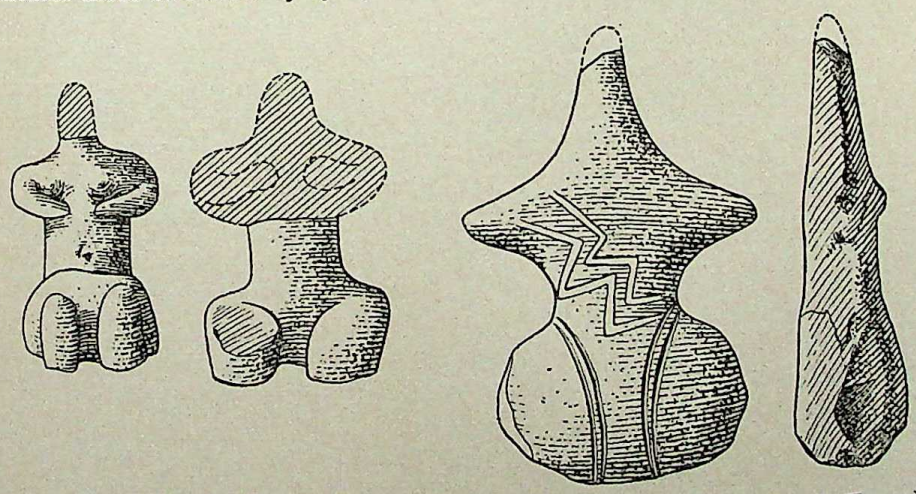

FIG. 55A. Neolithic Mother Goddess figurines from Knossos (after J. Evans).

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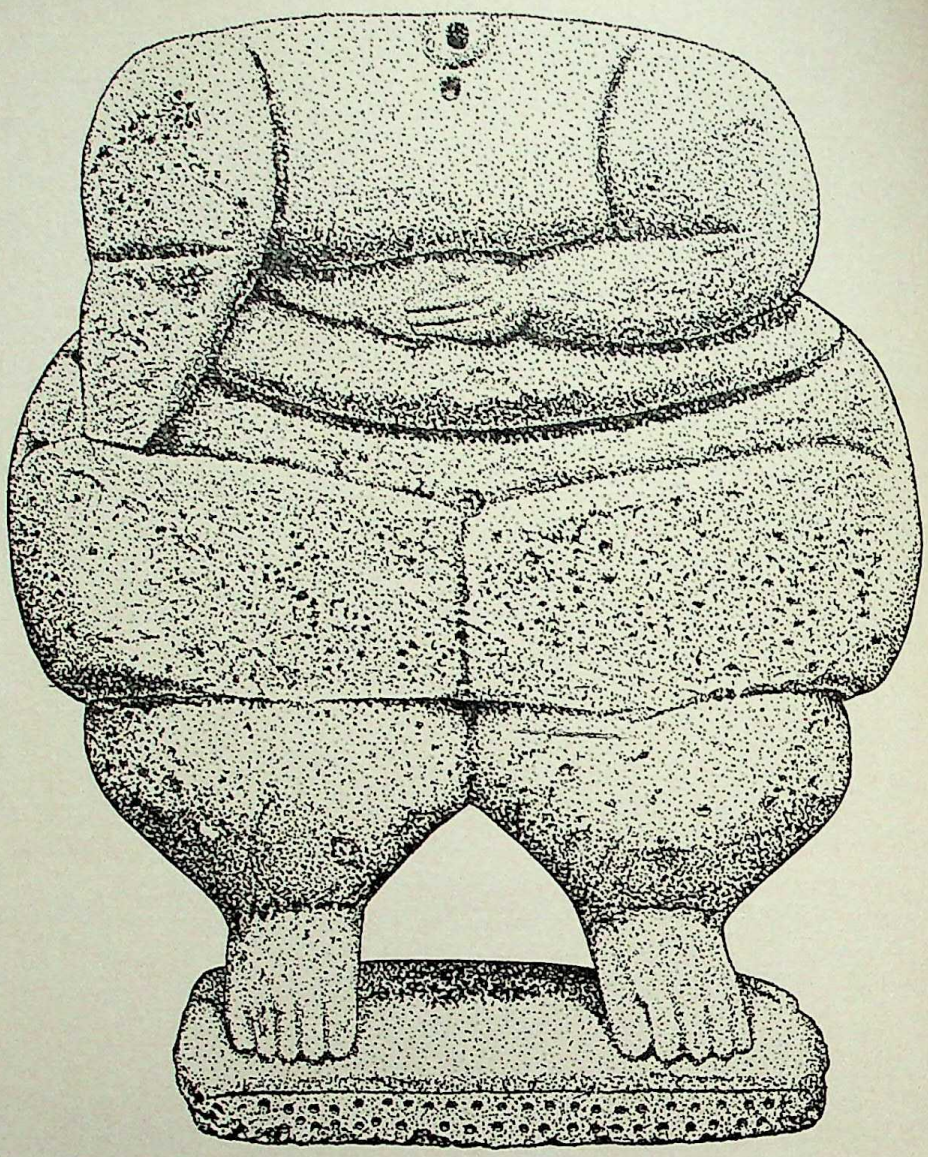

FIG. 55B. Limestone figurine of the Mother Goddess, Hagiar Kim, Malta. Height 20 ins.

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and a more highly developed cult of the dead have been added, but these were not unconnected with the idea of fertility. Even totemism and animal cults left some lingering inheritance among the new farmers.

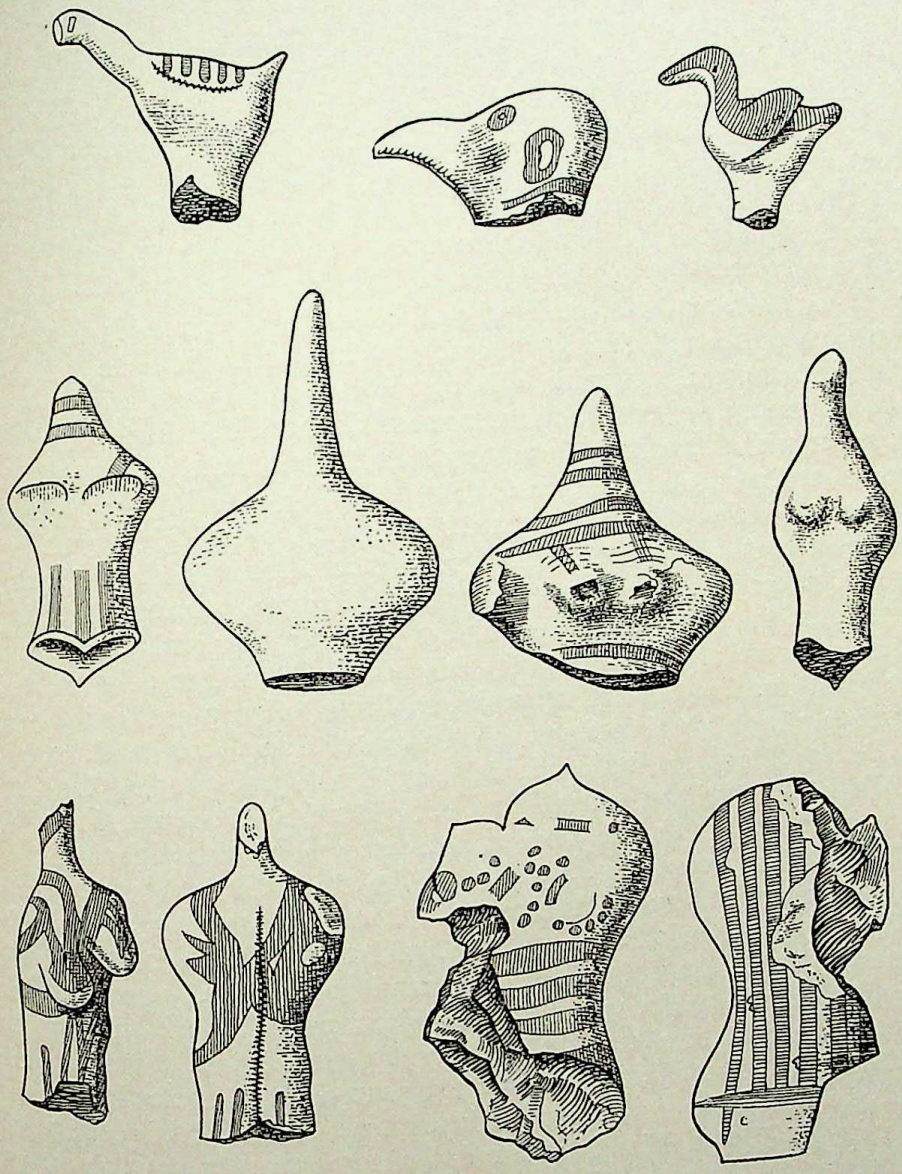

FIG. 55C. Clay figurines from Arpachiyah, Iraq (after Mallowan).

However much is uncertain, nothing can shake the mute evidence of hundreds upon hundreds of little clay, bone and stone effigies of the Mother Goddess (Fig. 55). They are present in the second pre-pottery Neolithic

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settlement at Jericho; they are present in almost every cultural province between Sialk and Britain and from Persia to Badari. Their presence has been repeatedly mentioned in the account of the rise and spread of the primary farming cultures (Chapter VIII). The few cultures that have not as yet been proved to have possessed these figurines do not seem to have any special significance—unless it is the earliest northern farming culture of the Trichterbecher people. These northerners are not known to have made such figurines nor any other symbols of the goddess, although they evidently shared in some form of the axe cult. Conceivably this absence may have meaning if it can be linked with the later emergence of a male sky deity among the northern battle-axe peoples. At Arpachiyah it is thought that a male counterpart to the Mother Goddess (herself well represented by figurines, some steatopygous and tattooed) was symbolized for the Halafians by the bull. They made pendants with bulls' heads and hoofs and frequently painted patterns derived from the bull's head on their pottery. The figurines of the goddess were also sometimes accompanied by models of a dove. There seems no doubt that all these cult symbols (together with domed buildings) were later carried directly to the Mediterranean, and particularly to Crete.

The cult of the goddess must have been brought to its highest, purest and most fantastically elaborated form among the conservative Maltese peasantry. In their megalithic temples they kept many limestone carvings of the lady, larger than the usual effigies and always portraying her with a magnificent obesity worthy of the Venus of Willensdorf. She is not only shown in the usual standing and sitting positions, but also lying on her side on a couch, her huge hip rising mountainously into the air. Associated with her are betyls and other cult objects. If these Maltese figures are linked with the spirals that ornament the temple walls, a great deal of the meaning of the feminine principle is proclaimed: eternal continuance through fecundity.

The Maltese temples were related to the megalithic funerary cult, and megalithic tombs very often (though by no means everywhere) show the presiding presence of the goddess. Her figurines were buried in the rock-cut tombs of Sardinia, and stylized symbols representing her took many forms in the grave furniture of megalithic and rock-cut tombs in Iberia. In Brittany some of the 'scutiform' carvings certainly represent her, and one megalithic tomb (Tressé, Ile-et-Villaine) displays two pairs of her breasts on its entrance slab. She looks down, somewhat faintly it is true, from the roof of a passage-grave in the Channel Isles. Nowhere does she rule more conspicuously than over the megalithic and chalk-cut gallery tombs of northern France (mainly in the Seine, Oise and Marne departments). Here carvings representing her face, and sometimes breasts, in a highly stylized manner dominate the narrow entrance to the tomb itself. A number of these curious carvings show the goddess with an axe, one of the links connecting the two cults (Fig. 56, A).

In the megaliths of Britain and Scandinavia she is less in evidence, but

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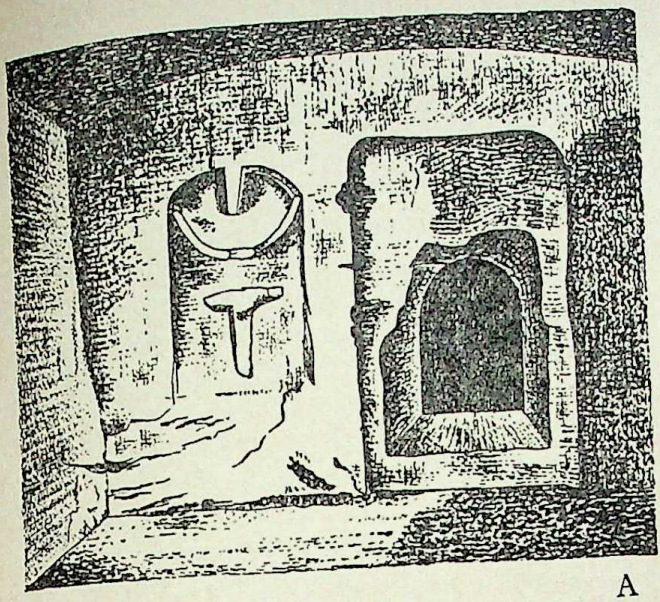
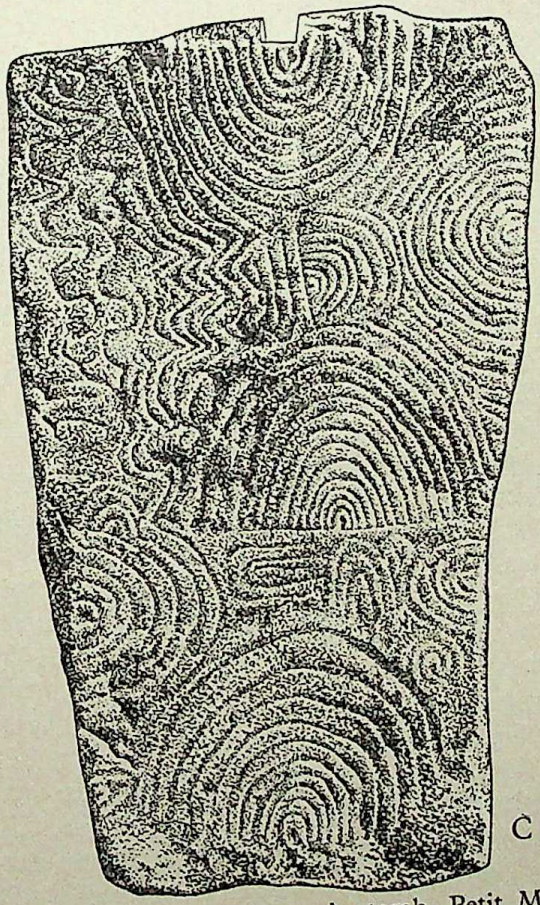


A

B



C

FIG. 56. Stone carvings from France. A: tomb, Petit Morin, Marne; B: menhir, Gard (after Childe); C: slab from megalithic tomb, Gavrinis, Brittany.

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some of the designs on the Irish tombs, and some of the patterns (occuli and other motifs) on Scottish and Scandinavian funerary pots almost certainly represent her.

It is possible to see these tombs themselves as representing the womb, and the crouched position of many of the burials contained in them as the foetal position in which the dead must await rebirth. However this may be, there is no question that the tombs, always kept dark and earth-fast however great the labour involved, do in some sense represent the chthonic ideas behind the Earth Mother; there is very little doubt, either, that the idea of rebirth was associated with burial in them. In this there was a contrast with the fertility ideas of the hunters. For clearly the divinity so universally honoured by the Early Neolithic farming communities was identified with the earth where the dead seed is buried and lives again. In this the religion of the first farmers is like that of most simple agriculturalists at all times. How far their Mother Goddess can be identified with the various historical goddesses with son-lovers who die, are lamented and are reborn with the corn must be considered later.

Some idea of the distribution of the axe cult has already been given in describing the little amulets that are one of its most frequent manifestations. That it was in truth probably sexual in meaning and associated with the goddess has already been suggested. The evidence already given is supported by the frequent engraving of axes on megalithic tombs in Brittany, and by the discovery there of a long greenstone axe of an obviously ceremonial magnificence buried with its pointed end towards a stone ring. In Denmark axes have evidently been placed in the bogs as votive offerings, and in one particularly interesting instance on Langeland one had been stood upright before a small earthenware cup. Another bog find was of a flint axe with a very short wooden handle evidently designed to be attached to a stand and quite useless for any practical purpose. Large axes carved in amber, found in Denmark, must also have a religious purpose. In fact this symbol provided by the most characteristic tool of Neolithic culture, may be seen as a fresh embodiment of the bison horn held by the goddess in the famous Palaeolithic reliefs at Laussel. The double-axe already made by the Halafians at Arpachiyah and elsewhere must have had a different connotation. It makes another of the religious symbols linking this culture with Crete.

It has been shown that the Neolithic goddess, though with a new earthy connotation, is directly descended from her Palaeolithic ancestress. What evidence is there for a comparable survival of totemistic ideas and animal cults? Many authorities think that the Amratian villages were occupied each by a totemic clan like Dinka villages on the Upper Nile. The representation on vases of crocodiles, scorpions, and other noisome creatures would be intelligible if they were totems, and some Amratian symbols reappear in historic times as emblems of nomes. This survival of totemistic ideas in social organization seems most likely, but how far they would still command

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strong religious emotion cannot be known. No doubt there would have been proper observances among the members of the nome, but there would hardly have been any strong emotional belief in the common origin of man and animal, no impassioned dancing and miming of the great spirit ancestors. The Nile-side villagers would have become both too domestic and too anthropocentric.

As for animal cults of other kinds, it is very interesting that they should appear to have existed at those two ancient Neolithic settlements: Jericho and Jarmo. It will be recalled that rough little clay models of animals were found near the colonnaded building at Jericho presumed to be a primitive temple. Similarly the villagers of Jarmo had modelled animals in clay, although here there was no association with a sacred building. It seems, then, that there might at first have been some transference of the religious feeling formerly directed towards wild animals to the beasts tamed and reshaped by man.

Something must now be said about burial rites and evidence for any cult of the dead and of ancestral spirits. Characteristically the earliest communities buried their dead carefully, often with food pots and other simple grave goods but with no funerary elaboration. Nearly always they were placed in a bent, crouched or tightly flexed position (as was also usual in Palaeolithic burials) in single graves either among the houses in the village or outside in small cemeteries. This was true of the Tasians (who used straw coffins), the Badarians (who preferred skin shrouds), the Amratians, Samarrans and Halafians. The al'Ubaidans were exceptional only in interring their corpses in an extended position. The most famous of the Yang-shao burials in China showed a gently flexed skeleton surrounded by a ring of magnificent funeral jars. In Europe the Black Earth peoples (of Tripolye and their neighbours) do not appear to have taken great care of their dead, nor do the Danubians—though few of their graves have come to light. Of the early western Neolithic peoples, those of El Garcel buried in caves or round cists, nothing is known of the Cortaillod rite, while the earliest Windmill Hill settlers in Britain were as lacking in ceremony as the Danubians, often making rough graves for their dead among the embankments of their causewayed camps. From all this evidence it emerges beyond dispute that the primary Neolithic peasantries did not at first practise either the large-scale communal burial nor yet the imposing funerary architecture and rituals that accompanied the spread of the 'megalithic missionaries'. On the other hand they everywhere readily embraced the new forms, and the recognition of the Mother Goddess, common to the early phase and to the age of megaliths, proves some continuity of religious impulse between them. The megaliths not only suggest more advanced ideas about death and rebirth, but also rituals that may have been in the service of ancestral spirits. The semi-circular forecourts, sometimes extended into complete circles, built before the entrance of certain tombs look as though they have been used for ceremonial dances. Gifts of food and drink placed

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at the entrances suggest the propitiation of spirits or the nourishment of those awaiting rebirth, while the small 'porthole' openings found in so many of the tombs may have been intended for the passage of spirits. The megalithic movement along the Mediterranean and up the Atlantic coasts seems likely to have been ultimately inspired by the far more elaborate funerary customs which by that time had grown up among the civilized peoples, and particularly among the Egyptians.

It is impossible to know how to fit the Jericho skull-heads into this general picture of Neolithic funerary observances. They can hardly have been trophies as the Mesolithic Ofnet skulls probably were, for they had not, like them, been rudely hacked from their bodies—indeed the bodies themselves had been given careful burial. Again, they had been more or less carefully built up to resemble the living face, and had been buried in or among the houses of the living. The chances are, then, that the original owners of these unique relics had belonged to the Jericho community and that the skulls were guarded by their descendants in the hope of winning their spiritual support.

This is the best point to mention a somewhat astonishing practice that was known to some primary Neolithic peoples as well as in Bronze Age times: the trephining of skulls. Equipped with nothing better than flint instruments, the operators chiselled round and round on the head until they had detached a neat disk of bone. Whether this feat was always performed on living subjects is not known but certainly it sometimes was—for they continued to live and the bone edges calcified. The disks were perforated and worn as amulets. This performance—one hardly knows whether to call it rite or operation—was already practised by the Cortaillod people. It may indicate the existence among them of semi-religious 'curing societies'; they may have conjured mad spirits, or harmful things the spirits had intruded, out through the hole.

A good deal has by now been said about the continuance of religious practices and concepts from Palaeolithic into Neolithic cultures. What can be inferred of the links between the religions of the earliest peasants and those that emerge in historic times? Above all, is it possible to see the primitive Mother Goddess living in any recognizable way in the female deities of the historic pantheons?

The answer, vague and uncertain as it must in any case be, seems to fall into two parts. First it is possible that the primitive goddess may be continued in certain very elementary female deities that can roughly be said to represent the beginning or basic nourishment of things. In historic Egypt the creative deity in myths of the beginning of the world were male, but Hathor, a goddess who is usually seen as a cow, but also has a role as the 'throne' or mother of Horus, represents a figure of this type. Drawings on Amratian pots seem to represent a cow-headed female and this, together with the similarity of the general conception of the Cow Goddess, suggests that she

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perpetuated some aspects of the older idea. On the other hand, because the Egyptians, after the unification of the Two Lands and the recognition of Pharaoh as a god had exalted the male principle and left the female merely the reproductive and supporting role, Hathor had none of the pre-eminence that the Mother Goddess evidently enjoyed among the simple Neolithic peasants of the Nile valley.

In south-west Asia the position was almost reversed. For the Sumerians, as will appear more clearly in the next part, 'the universe was conceived rather than begotten: the source of life is female. In the epic of Creation, Tiamat, primeval chaos, is called the mother of the deep who fashions all things'.* This view was common to most of the other Asiatic civilizations.

This brings us to the other half of our answer. It concerns the seasonal aspect of the Great Goddess. So far more emphasis has been laid on the simple idea of fertility that the Neolithic peasants shared with their hunting precursors. But there is no doubt that as the peasant societies developed, the idea of the rhythmical cycle of the agricultural seasons grew upon them, an idea naturally quite alien to any hunting society. The seasonal rhythm was associated with the burial of the dead seed and its rebirth in the green blade; it has already been suggested how the 'megalithic religion' may have incorporated this conception. As this grew, the old Mother Goddess was rivalled in importance by a son, a male divinity, whose loss she must lament but who may beget upon her his own rebirth. 'For if the female principle is taken seriously as the First Cause, the male principle must of necessity derive from it, and the god is, in this view, the child of the goddess.'

With the usual kaleidoscopic behaviour of divinities within and between pantheons, the elemental, cow or primeval chaos type of Mother Goddess might merge into this rather more poetic idea of the mother of the dying god. On the other hand they were not always identical, as is shown by Isis and Hathor in Egypt. These two were often identified, Isis even borrowed Hathor's horns, yet in relation to the dying god Osiris, Isis was quite distinct. A similar dualism can perhaps be seen in Tiamat and Ishtar. Thus we seem to see the very ancient fertility aspect of the Mother Goddess continuing as something just perceptibly distinct from the Mother Goddess of the dying god, a divinity proper to a fully agricultural people. The beginning of the emergence of the second out of the first must have taken place among the simple Neolithic peasants with whom we have been concerned.

Urban life, the strengthening of intellectual powers and of individuality and self-consciousness, male rulers and priests, military conquests, were to combine to lower the status of the goddess in all her manifestations in the centres of ancient civilization. In much of Europe (though later in time) her power seems to have been at least temporarily overthrown by the conquest of the battle-axe invaders. A warrior people, their pantheon was dominated by a sky or sun god, in all probability the deity who was served at Stonehenge.

* Frankfort, *Kingship and the Gods*, p. 284.

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Only round the Mediterranean, and most brilliantly among the Cretans, did the Mother Goddess maintain her sway. In large part she does so still.

Finally, is it possible to detect among our Neolithic societies the germ of the great public deities who made up the pantheons of the civilized states and who lacked the deep roots in the past attributed to the Mother Goddess? The al'Ubaid people not only built a simple temple at Eridu on the site where the later city temples were to stand, but it seems they also worshipped there the same god who was to be the presiding deity of the city state. '. . . it is likely that at Eridu there was continuity not only of architectural development, but of worship. In the absence of inscriptions this cannot be proved. But the god worshipped there in historical times was called Enki—lord of the earth but also god of the sweet waters. He is depicted surrounded by waters . . . and fishes sport in the streams which spring from his shoulders. Now a discovery made during the excavation of the al'Ubaid temples suggests that the same god was adored in them. At one stage the offering table and sanctuary were covered with a layer of fish bones six inches deep, remains, no doubt, of an offering to the god of whom it is said "When Enki rose, the fishes rose and adored him".'*

So in the history of Neolithic religion we can see the survival of Palaeolithic elements, the establishment of a Mother Goddess with a seasonal and earthy aspect proper to a primitive peasantry, and at last the first glimpse of the gods who were to come to power in the great urban civilizations of the Bronze Age.

* Frankfort, *The Birth of Civilization in the Near East*, p. 47.

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# CONCLUSION

THE Palaeolithic hunting era and the first spread of husbandry saw the peopling of our world. That must be recognized as the basic historical achievement of this vast span of time. From an inconspicuous and not very numerous family at the beginning of the Pleistocene age, mankind, now a single species, had spread to cover the greater part of the land surface of the earth by the end of the primary Neolithic phase. There were still great territories round the Pacific not yet penetrated by our kind, still many inhospitable regions in all the continents that had been avoided, but vast regions in Africa, Asia, Europe and the Americas had been populated.

At the point about four thousand years ago to which our account of the diffusion of the primary Neolithic cultures has been brought, that world population varied widely in density and in modes of life. Not so widely, indeed, as it does today, but all the same to a comparable degree. The pattern of living and of density was clearly zoned. From the Indus to south-eastern Europe and the Nile valley lay the urban centre whose full history is about to be told, round about it from China to Britain and from central Russia to the Sudan was the ring of farming peoples living in villages and hamlets, some more dependent on their crops, others on their flocks and herds. Beyond them again, in the vast northern ranges of Europe and Asia, and in the greater part of Africa, the hunting cultures survived, some affected, some quite unaffected, by the revolution in their midst. In America, while there were still as yet no truly urban civilizations, there was a zoning between the farming centres in the northern Andes and Central America and the hunting and food-gathering peoples to the north and south of them.

This, in roughest outline, is the final picture, but here we have to look back over the slow stages by which it was composed.

It has been agreed to recognize as men the beings who first started to use their hands and brains to make tools. The mastery of the animals' fear of fire was a bold step of early humanity. The hunting band gathered round its hearth is already far removed from the beasts. Yet it is very doubtful if even those of us most devoted to the fellowship of man could have felt very close to the *Pithecanthropi* or yet to those seemingly more variable and promising races who created the hand-axe cultures. We should certainly still have felt ill at ease with the Neanderthalers, even if they already knew of intimations of immortality. It is only with the Upper Palaeolithic hunters that we can begin to imagine a fellow feeling. Perhaps the survival of works of art, the only fully effective bond between one age and another, the living and the dead, has made this sympathy come too abruptly; perhaps for the whole of Upper Pleistocene times some at least of our forebears would

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have been hardly more mentally inaccessible to us than the more primitive hunters surviving into the modern age. Yet certainly that stage of human development that saw the rapid growth of imaginative expression through the arts, perhaps a great access in the power of language, and a new purposiveness in devising material equipment to meet the challenge of nature, does come suddenly into focus for modern eyes.

We have, then, to think of the achievements of this Upper Palaeolithic Age, most of them still incorporated far down in the foundations of our modern cultures. From the past the hunters inherited bodies and brains potentially as effective as our own, but which had as yet provided them with no more than a very modest beginning in material culture. Fire, the use of cave-dwellings, wooden spears, stone tools roughly shaped for thrusting, hacking, and the scraping of skins, skin clothing—this, so far as we know, was the sum of their material inheritance. They greatly enhanced it, equally for domestic life and for the arts of the chase on which all well-being depended.

The greatest contribution to domestic life was the development of the roofed house. The best examples come from eastern Europe and from a late phase of Upper Palaeolithic culture, but it is likely enough that they were being used much more widely and at an earlier date. The possession of such artificial shelter certainly helped to extend the human range, and in particular to enable the hunters to move northward and occupy the lands released by the retreating ice. Furthermore, one does not have to be a building society operator to feel that man is not quite man without at least the possibility of an artificial roof over his head.

The great development of working in bone and antler led to better equipment for both home and hunt. While detachable harpoon-heads and barbed spear-heads made of these materials were important additions to hunting gear, the spatulae, awls and, finally, needles must have greatly increased the women's capacity as leather-workers. Thus by the end of the period the inhabitants of northern latitudes were dressed in fitted garments that could do much more than a mere wrapping of skins to defeat frost and penetrating winds. So the satisfaction of man's two basic needs in a cold climate, for clothes and shelter, were simultaneously advanced. It is likely, too, that the ability to stitch seams enabled the women to improve the bags and other leather vessels, in many regions the only effective domestic containers.

The rapid development of manufactures in bone and antler was itself made possible by the increasing specialization in stone tools that was so important a part of the cultural acceleration of Upper Palaeolithic cultures. Gouges, chisels, saw-edged blades, awls (and possibly drills for turning them) all of them tools which later would be made in bronze, iron and steel, lay behind the new techniques. It must be supposed that in forested country they were used to improve carpentering skills, but of that we have no evidence before Mesolithic times. The new blade technique also provided the first efficient knives.

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While better harpoons, spear- and dart-heads undoubtedly increased man's effectiveness as a hunter, they were much less important than the two inventions that enabled him to kill at a distance. The spear-thrower, followed by the bow and arrow, must have meant that every hunter or hunting party could expect to bring back far more game than ever before. Fleet animals could more often be hit before they were out of range, dangerous ones before they had time to finish their charge.

So while houses and better clothes enabled the progressive blade cultures to extend their geographical range into colder lands, more deadly missiles increased the food supply and hence the possible density of population. It is therefore not surprising to find a great expansion of these progressive cultures, particularly into eastern Asia, where poor and conservative cultures had long been stagnating, and into the American continent where our species had never before set foot. They were also carried into Africa where they affected the various cultures of hand-axe ancestry, which, though they were more advanced than those of eastern Asia, had nevertheless also tended to stagnate.

The Mesolithic cultures away from the region where they gave rise to the new farming economy are generally adaptations to the new climatic conditions of post-glacial times and the resulting spread of forest. Their interest here lies mainly in the speed and success with which they met this challenge. The standard hunting equipment was modified for killing different, and usually smaller, game; nets, traps and hooks were invented or developed to exploit the sea- and fresh-water fish that had now become accessible and abundant. Fishing must also have been the main reason for the invention of the dug-out canoe and bladed paddle, in themselves considerable works of carpentry. This use of wood, representing both the threat and the new resources of the age, introduces the greatest innovation—the axe capable of felling trees. If the Lyngby antler version was the first true axe devised by man, the heavy, transverse-edged flint axe of the northern forest cultures was probably as effective an implement as could be made by flaking flint. The carpenter's kit-bag was further reinforced with the pick and the adze. Thus the Mesolithic cultures show man equally able to overcome fresh difficulties and to take advantage of fresh opportunities. When this mastery of the changing environment is compared with the forced migrations that seem to have been accepted in Lower and Middle Pleistocene times, we can see how much more flexible and purposive cultural forms had become even before the end of the hunting era.

The advances made in the non-material aspects of culture in the late glacial and early post-glacial period are likely to have been at least as great as in the material; unhappily it is impossible for us to know as much about them. We have inferred the growth of complex kinship systems, possibly totemic, and the sexual regulation that would have been a part of them. We have inferred, too, the ordering of communal societies by custom enforced by common consent and magico-religious sanctions. It has been assumed that

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although these societies may have been matrilineal and have allowed women a high status, their leaders would have been the most successful hunters and men with imaginative and other psychological gifts that enabled them to become shamans, medicine men and artists. There may have been no fully personified gods; but men's view of the universe about them being as much alive, as fully infused with spirit as themselves, was the expression of a religious emotion. So far as we can judge from the art, this emotion was largely directed towards the game animals with which they lived in such close relationship. Men certainly impersonated these beasts, and probably venerated common spirit ancestors. The most unexpected expression of a religious intuition was in the Mother Goddess, who seems already to have been established from western Europe to Siberia. Whether this personification of fertility came from an inherited image in the psyche or from the common emotional experience of all mankind, she has certainly, in her various manifestations, proved to be one of the most powerful and indestructible of all the great religious symbols.

As for the art that has told us most of what we know of the magico-religious life of the latest Palaeolithic cultures, it showed such an astonishing flowering of imaginative expression, such varied technical skills, that the incredulity with which the earliest discoveries were received can be understood and forgiven. No one could have supposed that the first known manifestation of man's creative powers as an artist could have risen at once to such heights. The purely technical aspect of this development is of particular interest here as it represents a new kind of cultural flexibility. If such inventions as axes and fishing gear show man's new ability to meet an external and material challenge, the devising and mastery of painting, engraving, carving and modelling show his ability to find the techniques to meet an inner, mental compulsion.

So by the close of Pleistocene times mankind had gone far towards building up the cultural foundations of future power. In material equipment our ancestors had already become the most deadly hunters among all the carnivores. They undoubtedly played a large part in the extermination of some of the old animal species. They had also devised cultural means for extending the climatic range in which they could exist. In magic they had found a means of reinforcing their material equipment by giving themselves confidence, psychological reassurance, in a hostile and difficult world. Socially they were organized for living together in an orderly fashion in spite of stresses quite unlike those present in animal groups, and by such disciplines as sexual regulation were probably already damming up vital energy and diverting it to turn the wheels of culture. And, by no means least important, they had built up religious rituals and beliefs that made it possible for the mind with its conscious summits and unconscious but potent depths to bring itself into harmony with the world in which it found itself. Without such religious manifestations the burden and strain of consciousness, the problems

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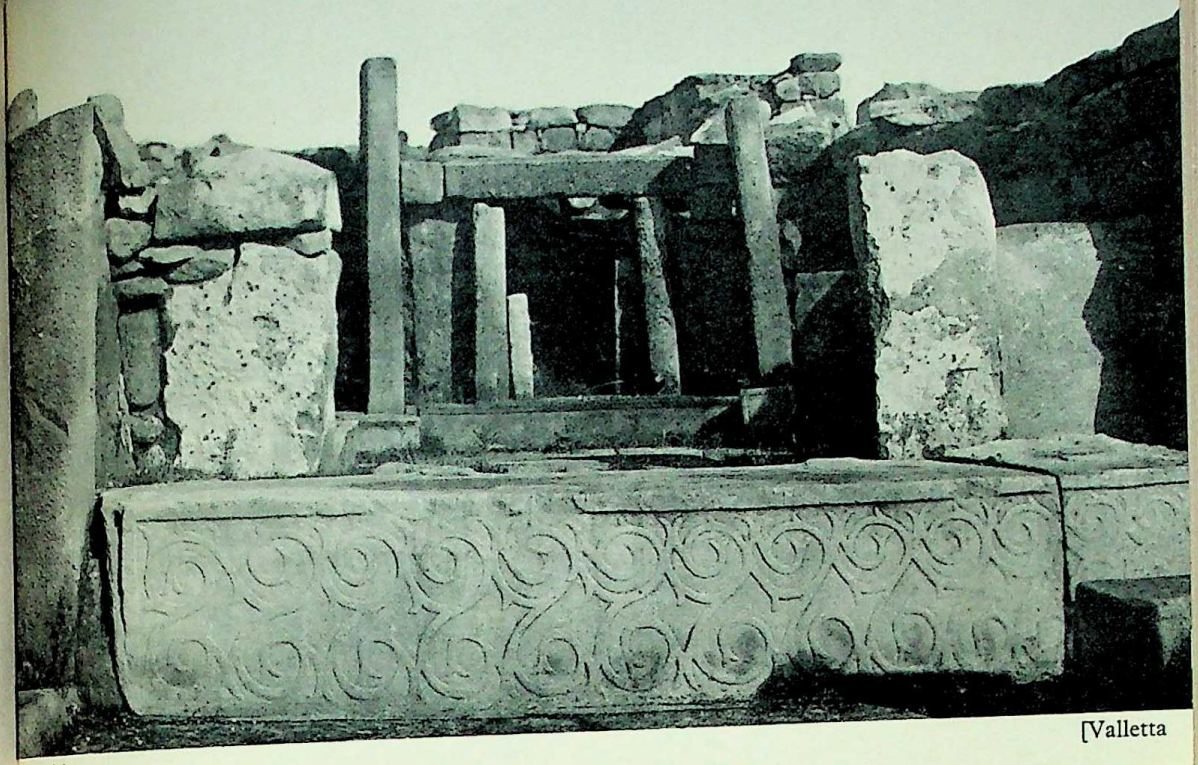

[Valletta

(a)

11 *Megalithic Architecture*

(a) *Tarkien temples, Malta. Main altar of the middle temple*

(b) *Mnaijdra temples, Malta. Interior*

[Valletta

(b)

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*Megalithic Architecture: New Grange, Ireland. Entrance*

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of the quickening psyche, might have been too much for our kind in spite of its success in creating a material culture.

As our knowledge of the earliest farming peoples carries us farther and farther back in time, we are beginning to be able to see Neolithic merging with Mesolithic traditions. Indeed at Jericho, where early in Boreal times the first farming population had tools closely related to those of the Natufians, the union can be said to have taken place. Belt Cave, too, although there is no continuity between the Mesolithic and Neolithic occupation there, gives us new understanding of a very early group of herders. Yet what we know of the beginning of farming is still so slight, so dependent on the chances of excavation sites, that we cannot be sure it is not seriously distorted.

Again, although Jarmo has taught us a good deal about the early selection and stabilization of cultivated varieties of wheat and barley, and Bat Cave in New Mexico about the cultivation of maize in the Americas, we still know little about the similar processes in the domestication of animals. The domestic forms of cattle and sheep or goats and pigs appear before us 'ready-made'. Once they had been established, it is remarkable with what uniformity the cereal crops and the domestic species that were to remain the foundation of all later cultural development were spread throughout the areas of primary farming. For this reason, and because domestic building and crafts improved so rapidly with the adoption of husbandry, we find the Neolithic communities from western Europe to China living lives remarkably close to those of all the subsequent peasantries that have supported the civilizations of mankind. Although metal tools, the plough, improvements in grain and livestock raised the output of food, there can have been little essential difference in way of life and outlook between these pioneers and their inheritors down to a century ago. Early progressiveness and later conservatism are equally striking.

There is no need to say much more about the tremendous effect the new Neolithic economy had on the size of populations. If advances achieved in the Upper Palaeolithic cultures made a considerable increase in population possible, farming and the storage of produce multiplied it many-fold. Indeed we have seen how in favourable conditions a community of three thousand souls could live in a compact little town even before the invention of the potter's craft.

This vast increase in the number of human beings who could find a livelihood on earth, together with the tendency to exhaust soils, led to the colonization of a number of localities, including many islands, that had never before been inhabited. On the other hand the limits that climatic extremes of heat, cold and aridity set on the possible range of husbandry coupled with geographical isolation from progressive movements, left many parts of the world still occupied exclusively by hunters, fishers and food-gatherers.

The domestic standards of the Neolithic populations were raised by the crafts developed by the women. Together with pottery, weaving and



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basketry, personal appearance and home amenities were greatly improved. Socially the villagers had to deal with questions of property and ownership much more difficult than those confronting any hunting society. We have assumed that generally the Neolithic village maintained communal ownership, and that government was by common consent interpreted by a council of elders or leaders. No doubt in the progressive cultures that were to attain civilization a more complex order of private and public ownership was beginning to establish itself in preparation for what was to come.

The underlying uniformity of the primary Neolithic village cultures, whether they were represented by the wooden houses of Europe, the matted huts of Egypt, or the mud-walled buildings of south-west Asia, is reflected also in their religious forms. These show no abrupt break with the past. The Palaeolithic Mother Goddess persisted and held sway over almost the whole range of primary Neolithic cultures; the concept of an embodiment of fertility was the same as of old, but now her aspect as the Earth Mother came to the fore. Rituals were adjusted to the cycle of the farming year, and the idea of death and rebirth assumed a deeper and wider significance. The dead were buried with some provision for a future life of the spirit, but in the absence of princely chiefs and aristocracies these preparations were normally simple enough. The furnishing of the grave with food and the weapons, tools and ornaments formerly possessed by the dead, can, indeed, be likened to Palaeolithic practice. The intense religious preoccupation with animals hardly survived in Neolithic cultures, although it is significant to find evidence for a cult of animals in two of the oldest known farming communities. Here and there animal cults may have been maintained to emerge in historical times, but more generally man's new mastery over his fellow creatures must have meant the loss of the old sense of relationship and of religious veneration for them, and the beginning of the belief that the beasts had been made for the benefit of man. The emergence of the high gods and pantheons whose power was to become so enormous in the ancient civilizations does not appear to have gone far before the end of our period.

Thus below the great diversity of local cultures that we have seen to be characteristic of Neolithic times there was also a strong underlying uniformity, based on the farming village community with its domestic and economic preoccupations and religious urges. There was, however, one important distinction between the villages of those parts of the worlds where civilization was to be born and those of other regions. They were permanent. Neolithic settlements in south-west Asia, the Indus valley, Egypt and south-east Europe were inhabited for generation after generation. Such outlying cultures as those of the Mediterranean incised wares, the western Neolithic, the Danubian, the Trichterbecher, and the Yang-shao never achieved this stability. Climate, soil, vegetation, failures in agricultural techniques, and historical chance worked against the long occupation of settlements. They might be lived in for decades, but not for centuries. The permanent village

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was the necessary prelude to the city. Once such villages could be established in the great river valleys with their ever-fertile flood plains, man's achievement of urban civilization was in sight.

The Palaeolithic and Neolithic cultures, in their slow but continuous improvement of material equipment, had incorporated a number of scientific principles and processes. In making fire, in cooking, brewing alcoholic drinks and potting they made use of chemical change. The spear-thrower was based on the principle of the lever, the bow and arrow and spinning on that of stored energy, the boat on those of density and of displacement. Domestication of plants and animals involved them with botany, zoology and genetics. Such empirical discoveries are sometimes written of with enthusiasm as representing the beginning of science. But this, surely, is a mistaken approach. If science is to have any real meaning, it must refer to a method derived from a mode of thought. Prehistoric men and women, it is true, possessed that part of scientific method that depends on observation. They saw the force behind a bent bough or what happened when a piece of clay lay in the fire, and individuals of genius made use of what they observed. But they understood neither the processes involved nor how to make the controlled experiments that would explain them. They did not follow up lines of thought. Furthermore they would not expect their 'scientific' knowledge to be effective without the help of magic and religion.

It can only detract from the later development of a genuinely scientific attitude if we try to recognize it too soon. Therefore in this account of Palaeolithic and Neolithic cultures no attempt has been made to disengage a strand of 'science' from the whole cultural fabric. This must be studied in one piece as representing early man's energetic and intelligent, but essentially unscientific, struggle to control the natural world about him.

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# PART TWO

# THE BEGINNINGS OF CIVILIZATION

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# AUTHOR'S PREFACE

BECAUSE in the following chapters it is claimed that the Bronze Age saw the birth of civilization as contrasted with the barbarism of the Neolithic period, it were well to start with a definition. This is the more necessary because the term has too often been loosely used of cultures which, while remaining essentially primitive, have developed arts or aptitudes that invite comparison with the achievements of more advanced peoples. Some criterion is obviously needed to fix the distinction between them.

The very word 'civilization' by its etymology implies an urbanized society. This is generally acknowledged: but because the word 'urbanization' is itself loosely used it is insufficient as a definition of anything else; the most convenient and easily recognizable criterion of civilization is the knowledge of the art of writing. As Professor Gordon Childe has put it in an admirable article entitled 'Civilization, Cities and Towns',[1] writing 'not only represents a new instrument for the transmission of human experience and the accumulation of knowledge, but is also symptomatic of a quite novel socio-economic structure—the city'. And here again definition is called for if the stages of human progress are to be clearly envisaged. We have in English the three words, 'village', 'town' and 'city'. The meaning of 'village' is tolerably precise and the term is rightly applied to the Neolithic settlement; the village is based mainly upon agriculture, though some of its inhabitants may be not food-producers but craftsmen; its affairs are likely to be directed by a headman or a council of elders; it may comprise a temple or church, and it may be walled. The village, growing in size, in population and in its social organization, may in the course of time develop into a town. But it does so by imperceptible degrees, and there is no point at which we can say that it has ceased to be a village and has become a town, for the simple reason that in the English language the word 'town' has never had any definite connotation; we use the word freely but vaguely, we mean something by it but, if pressed, cannot say in positive terms precisely what we do mean. On the other hand, between 'town' and 'city' there is a clear-cut distinction, because the essential characteristics of a city are lacking in a town. To quote again from Professor Gordon Childe, 'In English this untranslatable word [city] implies a cathedral, a bishop's palace, a body of canons and other clergy, and a large number of laymen who are neither farmers, fishers nor hunters. I have taken this as the essential character of a city (we might add that the term further implies a recognized form of municipal government, as regards England, and a royal charter confirming the city's status); a community that comprises a substantial proportion of professional rulers, officials, clergy, artisans and merchants who do not catch or grow their own food, but live on the surplus produced by

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farmers or fishermen who may dwell within the city or in villages outside its walls. These professional and full-time specialists represent a new class of persons, an absolute addition to the population that could be included in, or supported by, any barbarian community. This increment is my justification, or at least excuse, for speaking of an "Urban Revolution" on the analogy of the Industrial Revolution or the Neolithic Revolution.'

It was during the Bronze Age that this Urban Revolution gradually took place, and in the Bronze Age we can for the first time speak of civilization. Now, in certain areas of the earth, men were living not in groups or hordes but in organized communities, submitting to the disciplines and profiting by the opportunities of the city, intent upon the quality of living rather than upon mere existence, enjoying (some of them) that degree of leisure and wealth that makes possible the pursuit of learning and the cult of art, and stabilized by the possession of the written word which could enlarge the individual horizon by the experience of the past and preserve for the future whatever of value man might invent.

Only of a limited number of areas is this true, and then in varying degrees; moreover, the evidence that we possess regarding them is unevenly distributed and often sadly deficient; this must serve as the explanation, or the excuse, for a certain lack of consistency in my treatment of the subject. Where the development of some particular branch of culture was peculiar to one country, or in different countries followed different or even divergent lines, there the subject was best treated regionally. Where advance was more uniform, with local differences less marked, or where progress in one area was well documented while the evidence from others gave only supplementary detail, there the regional treatment could be abandoned and interest be concentrated on progress as made by man generally, the record drawing its illustration from different areas in turn. Our theme is not the history of this or that people or nation, and, although the regional treatment was often dictated by circumstances, stress has been laid throughout upon the degree of common effort that has gone to the making of the world. No people has lived for itself alone. Sometimes we can see how, by the catalysis of war or of trade or of migration, disparate elements of different cultures were, even in those early days, amalgamated into something new and of value; sometimes the combination was to occur only after the date at which our volume ends, but even then our knowledge of what was to be makes worth while an understanding of the elements so to be resolved.

The Bronze Age was indeed the formative period in man's cultural advance, and in the course of it the greater part of what constitutes modern civilization visibly begins to take shape; the headings of the chapters and sections in this volume cover almost every branch of human activity and might, with but few additions, serve as headings for a cultural review of our own time. Admittedly the contents of the sections show that the sciences were still in their infancy—man was not yet interested in speculation and theory; but he understood

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already the art of living and, on the practical side at least, was developing with skill and intelligence the opportunities for the good life which nature offered to him.

The field to be covered here is therefore very wide, far too wide for a single writer to have first-hand knowledge of all its varied features, any one of which may be the life-time study of a specialist. Since I figure on the title-page as sole author I may well be thought guilty of intellectual arrogance in that I have ventured to write on so many subjects lying outside my own experience and knowledge, and I confess—or rather, I protest—that I was at first daunted by the complexity of the task before me. My reason for attempting it is that in this far-reaching study of civilization's progress unity of view is more important than detailed analysis, and a volume of essays by different specialists could hardly fail to lack just that balance and harmony demanded by the whole, of which each of these subjects is but a part. The whole was therefore drafted by me to the best of my unaided powers, and then sections, as required, were submitted to the judgement of kind friends who have ungrudgingly placed at my disposal a wealth of learning to which I could make no pretension; the result is that such sections combine in their final version the form and treatment which I had thought most fit with a content approved by scholars of undisputed authority. I would therefore record here my deep gratitude to those who have helped me in their different spheres and have given to my work in those spheres whatever value it may possess. On the Egyptian side, Professor Sir Alan Gardiner has spared no pains, and on the Sumerian, Professor C. J. Gadd; on mathematics, astronomy and the calendral systems Professor B. L. van der Waerden has corrected and re-corrected with minute care everything that I have written; in the section on Law I have had the advice of Dr O. R. Gurney and of Professor W. F. Leemans; in the section on Medicine and Surgery that of Professor Lindeboom; throughout I have profited much by the criticisms and suggestions of Professor I. M. Diakonoff, Professor V. V. Struvé, Father Vast van Bulk, SJ, and Dr R. J. Forbes, and not least by the constant help of Sir Julian S. Huxley; and I am indebted to my friends Mr Shui Chien Tung, for material on the calendar of ancient China which I could not have obtained otherwise, and Mr Teulon Porter for general criticism of the text. To all of these I wish to render my heartfelt thanks; and to readers who may, not unnaturally, hesitate to accept what I say on matters so far from my competence I would plead that 'the voice is Jacob's voice, but the hands are the hands of Esau'.[2]

## NOTES TO PREFACE

1. In *Antiquity*, No. 121, March 1957, p. 36.
2. Genesis xxvii. 22.

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CHAPTER I

# THE BRONZE AGE

## THE CONDITIONS OF CIVILIZATION AND THE GROUPING OF MANKIND

At the beginning man, like every other animal, has been forced to adapt himself to his environment; that was the condition of his survival, and such species as failed to fulfil that condition died out. But alone of the animals man in time adopted a different solution to the problem of existence, that of adapting his environment to himself; by the control of fire, by the use of shelters and clothing, by the use of tools fabricated by himself, he could to some extent disregard the changes of climate, and instead of having to live where food abounded he made it abound where he lived. That revolution had been effected during the Neolithic period. There were still vast areas wherein it was incomplete—as it was to be for many centuries—where hunting and food-gathering continued to be the rule of life, but those were the backward areas; by the end of the first part of our story we have seen great parts of Asia, Europe and Africa sparsely peopled by farmers living in small but largely self-sufficient settlements. They were in possession of a considerable body of knowledge; flint-knapping, pot-making, weaving, agriculture and stock-breeding were commonly practised. Sedentary and self-contained, the various communities tended to develop, in response to their several environments, local peculiarities in their arts and crafts and, even more, in their speech, their customs and their beliefs; long before the Late Stone Age came to an end the main branches of the human race had become differentiated physically and, to some extent, mentally; but in spite of this it remains true that throughout the vast stretch of the Old World wherever evidence of Neolithic culture has been found their mode of life was essentially the same.

Out of this homogeneous and more or less static condition of barbarism was now to be evolved the complex picture of the modern world. The change, portentous in its ultimate effects and almost bewilderingly rapid in its operation, began in the fourth millennium before Christ. Far from being general, it was confined to a few areas where conditions were favourable; and whereas in those areas the whole manner of man's life was quickly transformed, elsewhere, over the greater part of the world's surface, the ancient barbarism was to persist for centuries and for millennia. The revolution started in Mesopotamia and very soon afterwards spread to Egypt, and in those two countries we can trace its course from the outset; it took place in the Indus valley also, and in China, on the banks of the Yellow River, but in both these cases we are faced with a civilization already full-grown whose genesis is

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a matter of conjecture. While therefore our story must deal primarily with all four centres, Mesopotamia and Egypt are those which give us the detailed and factual evidence required by the historian (Map XI). But before discussing the nature of their contribution to progress we should note the reasons for which they played so much more spectacular a part than did the rest of the ancient world.

If hitherto change had been painfully slow it was because Neolithic man was hard put to it to live. All his efforts were necessarily devoted to getting sufficient food for his family out of an unpromising and a thankless soil; only when the struggle for existence ceased to absorb all his time and energy could he find leisure for the amenities of life. The first requisite for civilization was a wide extent of rich soil easily worked.

That condition applies to a good many regions wherein in fact cultural advance was none the less negligible. To get the best out of life man requires not only good soil but also a climate that permits and encourages him to work out of doors, in moderation, all the year round. A lotus-land existence in which nature supplies a livelihood without the need of effort applies no spur to initiative, and a climate which exhausts man with unceasing toil for half the year and for the other half immobilizes him in cold or sodden misery equally disinclines him from any effort of invention. Only where soil and climate alike were favourable could man produce in excess of his actual needs and yet have leisure to enjoy the surplus; and hitherto he had found no region which satisfied both conditions.[1]

Then, apparently at more or less the same time, two new lands came into being. The vast marshes through which the Tigris and Euphrates made their way to the Persian Gulf, bringing with them the silt from their upper reaches, began to dry up, and the water gave place to an alluvial plain more fertile than any other man had known. Similarly in Egypt the delta became for the first time habitable: the Nile waters were confined to definite channels, and the yearly inundations so far from being destructive only added to the richness of the soil. In both regions (and possibly the same was true of the Indus valley) it would seem that nature suddenly[2] provided, in a part of the world where the climate was best suited to living conditions of the time, a land where agriculture was rewarded without stint and with little risk of failure; what was no less important, the new territories were so extensive that they could support such a population as under the conditions of the Neolithic Age had been impossible. It was not a case now of small and isolated hamlets; families and clans congregated in villages, some of which might grow into towns, and the towns might be in touch with one another. With the settlement of these two river valleys we see the emergence of civilized society. Political entities of unprecedented complexity arose; occupations became specialized, involving divisions of class, trade was organized, writing was invented, monumental architecture expressed the symbolic significance of public buildings and representational art tended to replace the largely decorative art of Neolithic times.

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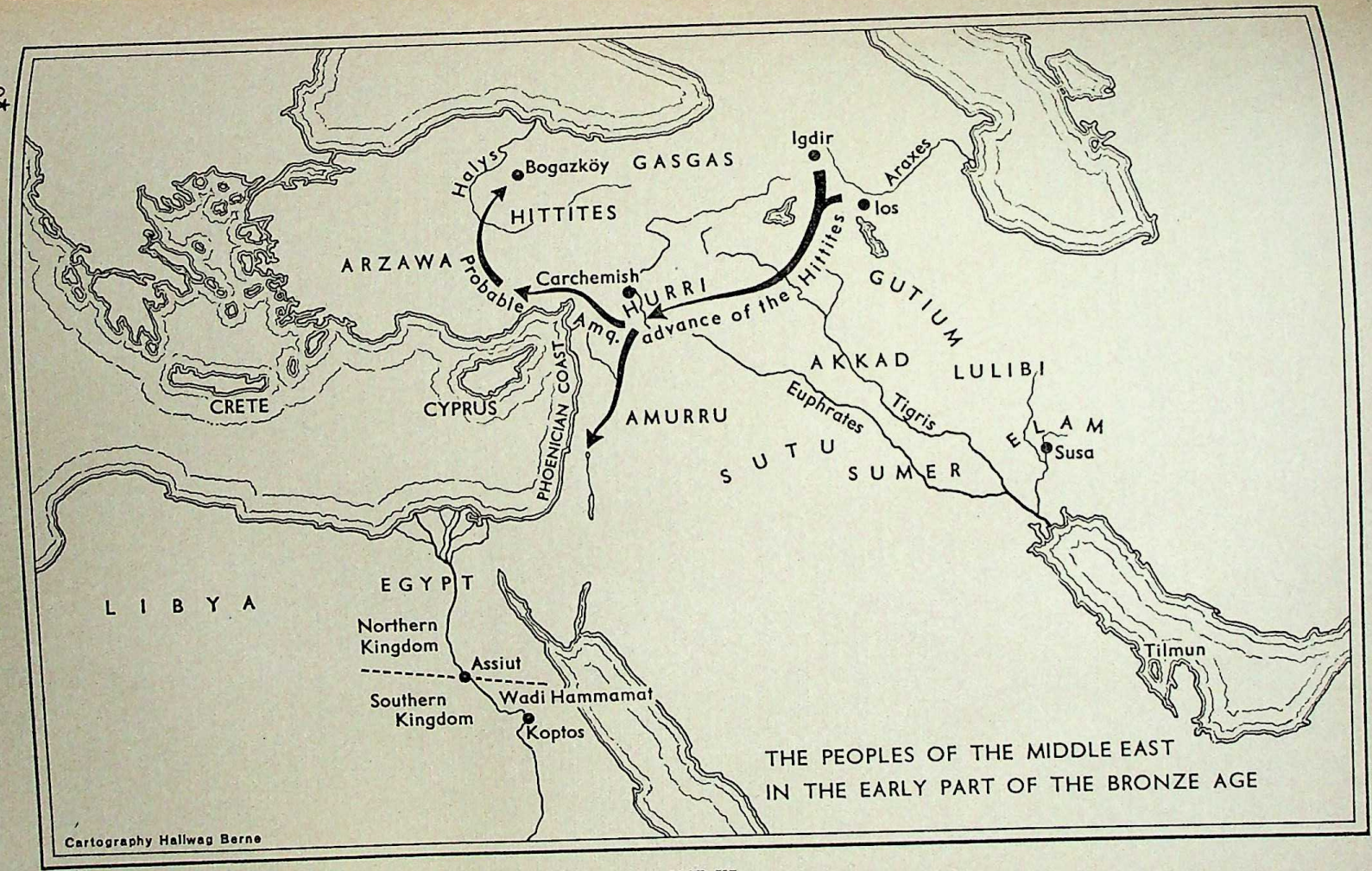


MAP XI

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But while the impetus was the same and the revolution that resulted from it was similar, the process of change in the Nile valley and in the valley of the Tigris and Euphrates differed in important respects. In both of them corporate existence took an entirely new shape in that the simple social life of the old days was reconstituted on a fresh basis; but in Mesopotamia civilized society crystallized into a number of separate nuclei, each city forming a small state jealous of its autonomy, whereas in Egypt the whole Nile valley was united in a single realm under one king. We shall see later that this contrast in political organization is but one aspect of a profound difference in the spirit of the two civilizations.

*Egypt*

In Egypt the high desert which had been the hunting-ground of Palaeolithic man had long since become the desiccated waste which we see today,[3] unfit for human occupation, though the side *wadis* were still filled with jungle growth and supported animal life. The Nile valley proper was still, in Badarian times, marshy and waterlogged, and the delta was but a reed-covered swamp; settlement was necessarily confined to the limited areas wherein agriculture was possible, to the great depression of the Fayum, to the valley borders and to the lower reaches of the *wadis*. These first inhabitants[4] were apparently of the same stock as the peoples of eastern Africa, the ancestors of the modern Bega and Somali. Now the water-level sank, and man could move down into the valley, and since the new land created by the Nile was as extensive as it was rich immigrants filtered in from neighbouring countries. From the north-west came in, probably, Libyans, belonging to the north African branch of European man; from the east came Semites, perhaps bringing with them their flocks, for the Badarian sheep is of west Asiatic stock, and the pottery and stone vases of Badarian Egypt have affinities with those of Palestine; but the main body came from the south and south-west, Nubians and Libyans, thus at the dawn of history anticipating those invasions which were to recur time and again in after days. The mixed population was spread along the river's course but concentrated mainly in two widely separate areas, the Nile valley south of Assiut, and the Fayum,[5] so that already the distinction between Upper and Lower Egypt was a reality, so much so indeed that the development of two independent states was inevitable. Then at the beginning of what is called the Naqada II period, probably in the second half of the fourth millennium BC, there arrived a new wave of immigrants, Semites from Asia, bringing with them a higher culture and at least an elementary knowledge of metal. These settled first in the south country, not, it would seem, as conquerors but as peaceful newcomers, and ushered in there the Chalcolithic phase; later they colonized Lower Egypt also. By the end of the fourth millennium the disparate elements of the population had amalgamated so thoroughly that the physical characteristics which had differentiated them can no longer be distinguished: the Naqada skulls are neither Semitic nor

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Libyan but Egyptian; some of the pottery resembles that still made by the Kabyles of north Africa, but the language of the people has, especially in its vocabulary, Semitic elements combined with the native Hamitic; some new gods have appeared, and may have been imported, but the religion as a whole is definitely Nilotic and presumably inherited from the Badarian farmers. In our survey therefore we shall have to deal with a hybrid people who, in spite of geographical or political divisions, none the less formed a consistent unity and had already begun to develop a character of their own; that hybridization[6] may be held to account for the intellectual energy which enabled the Egyptian to take advantage of the favourable conditions of the land and to develop one of the great civilizations of the ancient world.

*Mesopotamia*

In Mesopotamia the process of nature was different. The delta of the Tigris and Euphrates, instead of being formed from north to south as one might expect, started in the south. Two other rivers, the Karun running from the Persian mountains in the east and the now dry Wadi al Batin which drained the heart of Arabia, emptied into the Persian Gulf almost directly opposite one another, and in due time the vast amount of silt carried by them formed a bar across the gulf; from that moment the silt of the Tigris and Euphrates, instead of being borne out to sea and scoured by the tide, was deposited in the lagoon behind the bar and raised the level until what had been deep water turned to marsh and eventually to dry land. But it was against the bar that the dry land formed first, and therefore the earliest immigrants settled in the extreme south; according to Sumerian tradition Eridu, the southernmost of all their cities, was the oldest of them. The south country, then, was taken over by a wave of immigrants coming from the east—on the evidence of their painted pottery we can associate them with Elam; as the apex of the delta formed in the north a wholly different people, this time of the Semitic stock, moved down into it from the north so as in the course of time to form in the upper part of the country the majority of the population; the new land was divided therefore between two unconnected peoples, and its title in later times, the Land of Sumer and Akkad, records a duality that goes back to the beginning of its history. But the division was not absolute in any geographic sense. Some of our earliest documents attribute Semitic names to individuals and even to kings of the southern cities, while, on the other hand, not only the dispersion of the earliest (al'Ubaid) pottery but also the royal records of the Dynastic period prove that the southerners extended their power to the north-west as far as Mari on the middle Euphrates. There was indeed a considerable overlap, but it remains generally true that in the north-east the population was predominantly Semitic while in the south and west it tended to be mainly of the other stock.

The southerners, whom for the sake of convenience we may call the

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Sumerians, although the name should properly apply only to the mixed stock which eventually evolved what is rightly called the Sumerian civilization, were an eastern people about whom very little is known. Their language was agglutinative, like Turkish or Mongolian, but has no recognized affiliation to any other language. They were still in or were but beginning to emerge from the Neolithic stage of culture, but they had advanced it to a rare height of excellence. Their painted pottery shows close affiliation with that of the people of Susa, in southern Persia, and would appear to be a locally specialized branch of the Neolithic painted wares whose vogue extended as far eastwards as Baluchistan and as far northwards as Mongolia. Primarily farmers—their flint hoes and sickles of burnt clay are found in astonishing numbers on all sites of the al'Ubaid period—they were none the less founders of cities, and several of the great urban centres of historic times traced their origin back to these first settlers. As traders they must have been active, for their pottery occurs freely on northern sites in the Semitic sphere and travelled westwards as far afield as the Amq Plain on the lower Orontes. Since excavation at Eridu has brought to light the superimposed ruins of no less than sixteen temples all belonging to the al'Ubaid period and since at Warka there are found eleven superimposed building-levels of exclusively al'Ubaid culture, giving a total depth of 15 metres (and the al'Ubaid pottery continues in use, side by side with the Uruk ware, for another 9½ metres), it is certain that the period must have been a very long one; and if we may judge by the material remains that survive, the original culture developed on its own lines without any serious admixture of foreign elements except that in the later days at least copper began to come into use. Then, as Sumerian historians of after times were to record, 'then came the Flood'.

This literary record is substantiated by the results of archaeological excavation. At Ur there is found material evidence of a great inundation which occurred towards the close of the al'Ubaid period, thus agreeing with the sequence-date vaguely assigned to it by Sumerian tradition. The city of Ur itself, standing as it did on a mound already fairly high, survived; but numerous village sites of the al'Ubaid period show no signs of later occupation and must have been completely destroyed; the mass of silt deposited against the Ur mound implies a flood of a depth sufficient to drown the entire delta, and it is easy to believe that the bulk of the population perished.[7]

Naturally the land was too valuable to be left untenanted, and a horde of immigrants flocked into it from the north and settled down side by side with the survivors of the old stock.[8] They brought with them new arts. They were skilled in the working of metal; they introduced the potter's wheel, and their plain wares, grey or black or red, soon displaced the now degenerate painted pottery of al'Ubaid. If, as the excavators at Warka believe, the great palace there with its mud-brick columns and walls overlaid with elaborate mosaic (Pl. 13, a) really goes back to the 'Uruk' period, then under the guidance of the newcomers the south country achieved a prosperity unparalleled hitherto;

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and if, as seems probable, the invention of writing dates to this period then the contribution of the Uruk people to civilization was great indeed. The earliest written documents are in the Sumerian language, and it has been urged by some scholars (e.g. S. N. Kramer[9]) that the real Sumerians were the Uruk people, migrants and barbarians who conquered the more civilized Irano-Semitic al'Ubaid stock. But, judging by the archaeological evidence, the Uruk people were not barbarians (they were a metal-using folk, and they introduced the wheel) and so much of the later Sumerian civilization can be traced back to the al'Ubaid people that they can scarcely be regarded as a crushed and suppressed class.[10] It is more likely that the two stocks amalgamated (as seems to be implied by the long cultural overlap in the stratification at Warka) and that by the time writing was invented, late in the Uruk period, the Uruk people had adopted the al'Ubaid language;[11] that is something for which history provides many parallels.

But shortly before 3000 BC another invasion, this time again from the east, brought a fresh change. We find no evidence of war and destruction; quite possibly things started with 'peaceful penetration', but undoubtedly in course of time the 'Jamdat Nasr' people made themselves masters of the country. For the most part they carried on faithfully its cultural traditions, as indeed would be but natural if they had been acclimatized to them during the period of their gradual incoming; but they themselves were by no means savages. Their pottery, with its polychrome decoration, is of a high order; they were admirable carvers in stone as had been the Uruk people before them; they were good builders and they adorned their walls with painted designs; moreover, under their régime the art of writing was further developed and came into common use. Although, after a century or two, their government was overthrown by the older elements of the population, they had certainly made their contribution to the culture of the country, and presumably they had also by intermarriage added something to its breeding. When they fell from power, and the Early Dynastic period of Sumer started, Sumerian civilization properly so called was fully formed and the Sumerian people, who will figure largely in our history, was an amalgam of three racial elements whose identity was now merged in the common stock; but when we attempt to trace that civilization back to its source we find that while each of the three partners played an essential part in its development an unbroken tradition links the historic age with the primitive farmers of al'Ubaid.

To the north of Sumer, along the middle reaches of the Tigris, lies the country which in later times was to be called Akkad. It had been inhabited by Neolithic men long before the delta was formed, and here, on such sites as Jarmo and Hassuna, we can see the first beginnings of agricultural village life in Mesopotamia. But by the time when the al'Ubaid people were developing the south country, the north, for all that it had had the earlier start, seems to have been lagging behind in progress. Progress of course there had been, and Nineveh may even at that time have ranked as a town rather than a village,

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but it is noticeable that such objects of luxury as its inhabitants enjoyed were for the most part imports, not of local manufacture. According to Assyrian tradition, the early people of the land were Subaraeans, whose country lay to the north and east of Assyria proper and included at least part of Assyria itself; these Subaraeans seem to have been related to if they were not actually identical with the Hurri. But mixed with them there was a Semitic element—Amurru—akin to those earliest Semites who had come into northern Mesopotamia at the same time as the al'Ubaid people came into the south. This element was in course of time to preponderate and to spread southwards so that when in the twenty-fourth century BC Sargon set up a new kingdom in the north and established his rule over the entire delta, his dynasty and his government were Semitic and his capital city was Akkad.

Up to nearly that date the north country could boast no real culture of its own. There is no reason to think that it formed a united realm governed by a single ruler; the towns, if we may judge from Assur, were held by the Sumerians with a Sumerian governor and a garrison, and though the handicrafts might follow local traditions the arts were those of the south country and even the gods were largely those of the Sumerian pantheon. From very early days there had been constant wars between south and north; the Subaraeans were no match for the well-organized armies of Sumer and were held in subjection, but they could appreciate the superior civilization of their conquerors and were quick to imitate it; by the time of Sargon they had assimilated practically all that Sumer had to teach, and amongst other things had learned the art of war. It was as a military power that Akkad, and afterwards Assyria, was to play so prominent a role in Middle Eastern history, but it initiated little else, so that up to the end, whether Nineveh or Babylon was in the ascendant, it made hardly any difference to the character and the course of Mesopotamian civilization.

Westwards from Akkad, along the middle Euphrates and almost to the shores of the Mediterranean, was the land of the Hurri.

*North Syria*

The original home of the Hurri seems to have been in the general region of Armenia, where they would have been neighbours of the Hittites, and, as has been said above, they are scarcely to be distinguished from the Subaraeans. At what date they spread westwards across northern Mesopotamia we cannot say with any precision, but it was early in the Bronze Age, certainly long before the time of Sargon and Akkad, when Hurri documents were already being written in the cuneiform script. The earlier inhabitants were presumably Amurru, Western Semites, but it would be unwise to claim any one ethnical name for the authors of the very different local cultures which the exploration of the area has brought to light.

From the outset the country was thickly inhabited. The settlements were naturally most dense in the well-watered land along the Euphrates and in the

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valley of the Khabur, then on the north Syrian plateau and in the Amq plain by the Orontes, stopping short only at the foothills of the Amanus range; much of the area, open steppe covered in spring-time with lush grass, was more suitable for the pasturing of flocks and herds, and its sparse population would be dwellers in tents rather than in houses; but even so the *tells* that dot the plain, sometimes far from any source of water existing at the present day, bespeak a region of no small importance.

At the beginning of the Chalcolithic Age, or perhaps rather earlier, there was developed here a type of painted pottery which is one of the most remarkable in the ancient Middle East (Fig. 57). It is a hand-made ware magnificently decorated with polychrome designs (red, black, white and purple on a pink or cream ground) built up for the most part from geometrical elements elaborately combined but including flower rosettes and more or less schematized bucrania, this last suggesting a religious motif. Called Tell Halaf ware after the place where it was first discovered, it was widely dispersed; there was a centre of manufacture at Tell Arpachiyah (Arpachia) in the valley of the Upper Zab, another at Carchemish on the Euphrates; evidently it was not all manufactured at a single centre, and there are local differences in the shapes and decoration of the vessels, but the family resemblance is unmistakable. The finest of the ware comes from the Upper Zab valley, which may have been the main productive area, but it occurs at Nineveh and as far west as the Amq plain, though there it is certainly an import brought in by the way of trade. It was an original and a gifted people that produced the Tell Halaf pottery but evidently not one equipped to hold its own in the struggle for existence, for the settlements all bear the marks of violent overthrow. In the east it was replaced by people using a late northern variant of the al'Ubaid ware—suggesting just such Sumerian conquests as we have noted in the case of Assyria. At Carchemish a barbarous Neolithic folk squatted on the ruins of the Tell Halaf village, to be replaced later by Bronze Age invaders. In the Amq plain the indigenous population began to import northern al'Ubaid pottery instead of that of Tell Halaf and then proceeded to evolve from the pattern of the two foreign fabrics a painted ware of their own—the Tell esh Sheikh ware—which if it could not rival that of Arpachiyah yet possessed considerable artistic merit and originality (Fig. 58). While it would appear to have been evolved in the Amq, it enjoyed a fairly wide dispersion, for it is found in Cilicia, at Mersin, and specimens of the ware, or at least of a derivative of it, are reported from Hacilar in western Anatolia, i.e. it occurs along the overland trans-Anatolian route which leads on ultimately to south-east Europe and Thessaly. In the Amq it is ousted by the black burnished pottery of Kherbet Kerak concerning which more will be said hereafter.

Even when the Hurri came upon the scene there was no cultural uniformity throughout the whole region occupied by them. Like the Subaraeans in Akkad, they were an imitative people, ready to be impressed by a superior civilization, and they had that of Sumer constantly before their eyes. In the

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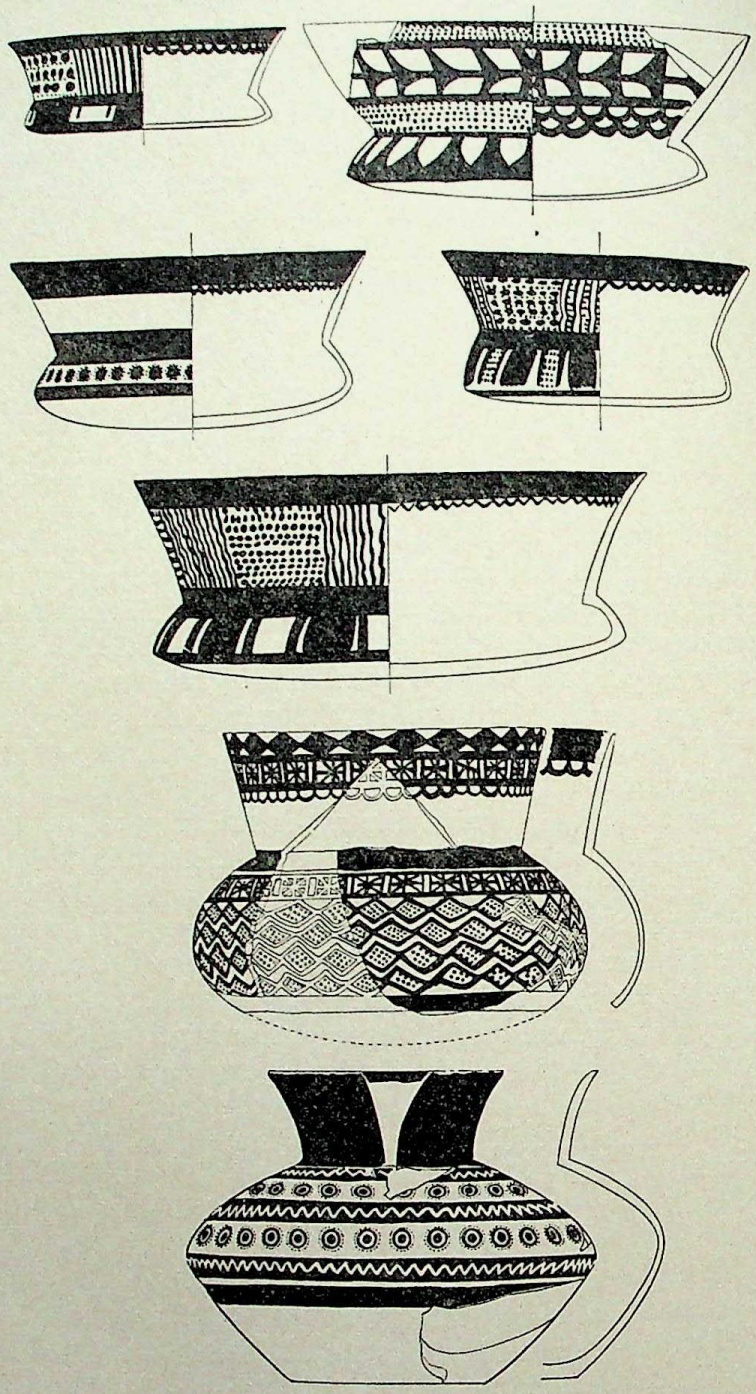

FIG. 57A. Tell Halaf pottery.

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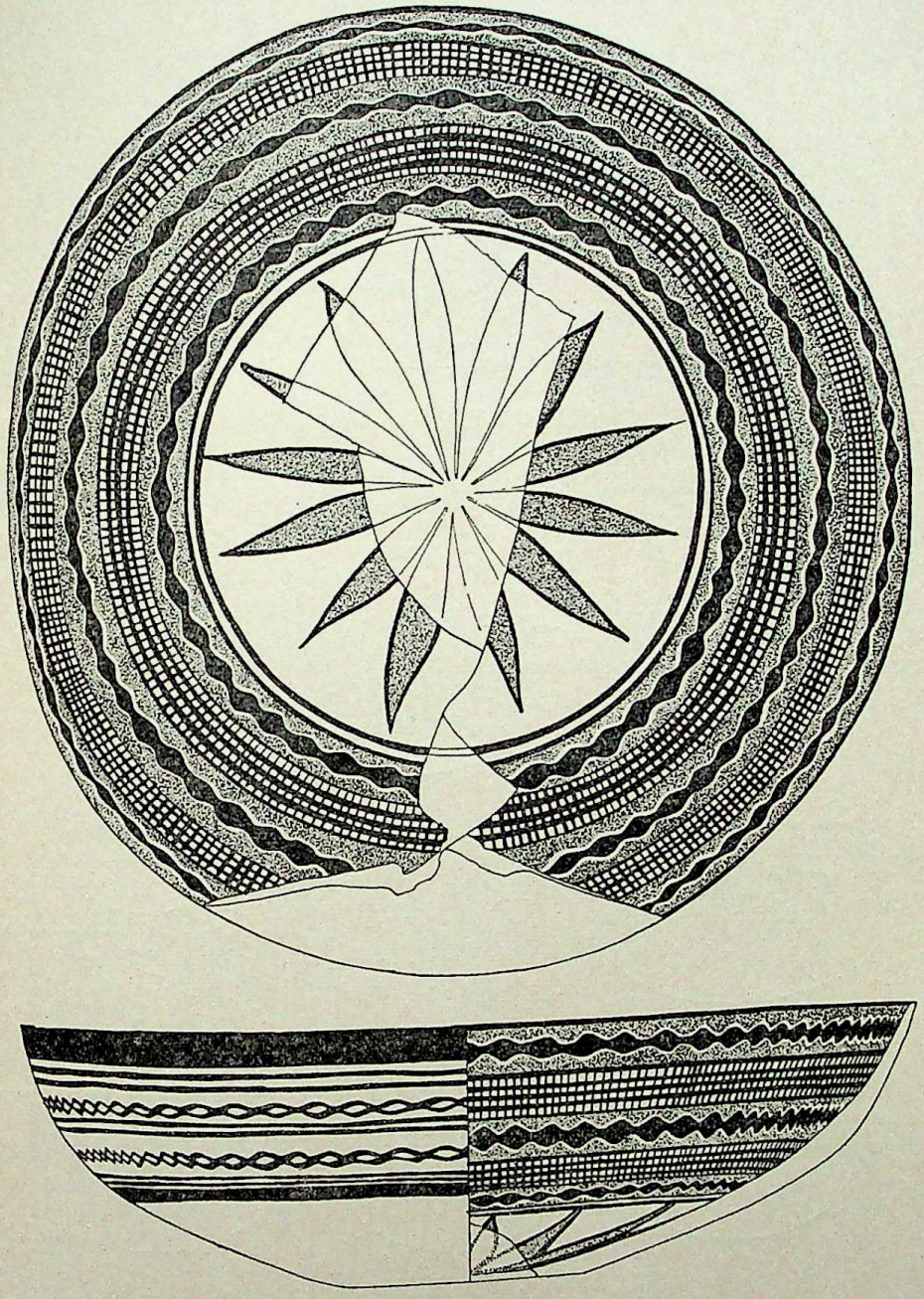

FIG. 57B. Tell Halaf pottery.

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eastern part of their country bordering on Akkad, which for a long time was subject to the early dynasts of Sumer, Sumerian influence was so strong that

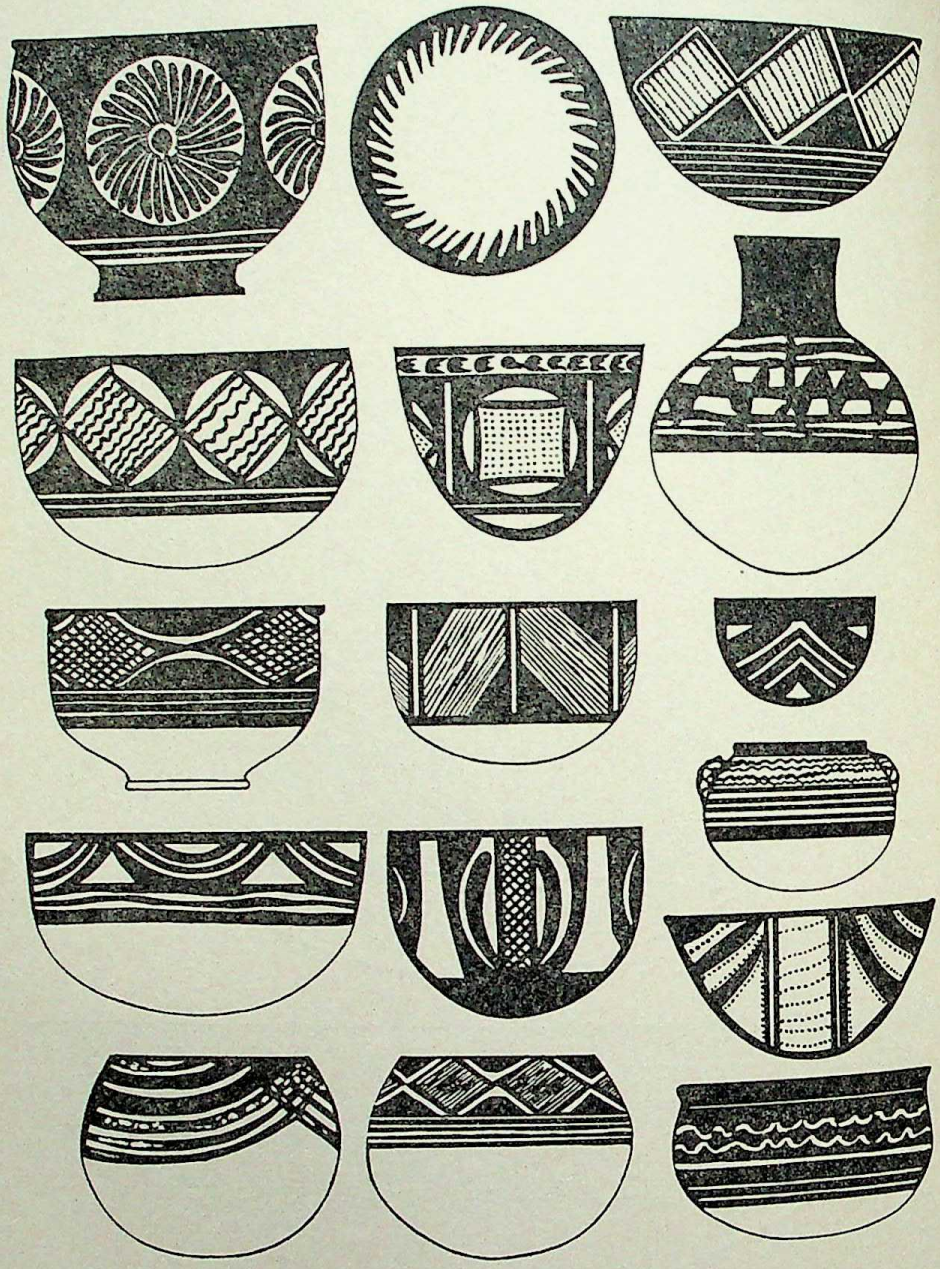

FIG. 58. Tell esh Sheikh pottery.

its capital city, Mari,[12] must, so far as its material remains go, be reckoned as an outpost of Sumer—so strong indeed that Mari itself could produce a royal family deemed not unworthy of a place in the list of Sumerian dynasties.

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Farther to the west Sumerian connections were less intimate, though thanks to the trade route passing up river to the cedar forests of Amanus there was an exchange of ideas, so that a successful ruler of Alalakh could build himself a palace on the model of those of his Mesopotamian clients. But the region was too wide—and perhaps, in the west, the population too mixed in blood—for anything like political unity. When historical records begin we find it split up into a number of small states; Carchemish, Harran, Aleppo or Yamkhad were independent, each as best it could controlling minor kings, its neighbours and vassals; Yamkhad at least was almost as closely in touch with Syria as with Sumer, and its southern boundary ran with that of the purely Amurru kingdom of Damascus.

The Hurri seem to have been imitators rather than initiators of culture, but for that very reason they played an important part in cultural history. Mixing freely as they did with other peoples (we find Hurrian names on tablets in southern Mesopotamia at the time of the Third Dynasty of Ur, and there were Hurri in southern Palestine before the patriarchal period) they were admirable middlemen in the traffic of ideas. Themselves thoroughly imbued with Sumerian traditions, they handed those on to the Hittites, and it was almost certainly through them that the Hittites learned the art of writing and adopted the cuneiform script invented by the Sumerians.[13] If they did not invent, at least the Hurri spread far afield and so perpetuated much of the highest civilization that man had yet evolved.

*Anatolia*

North of the Fertile Crescent the broken mountainous country and high-lying plateaux of Asia Minor were inhabited by peoples of whom, in the Neolithic Age, we know little or nothing; but this wild region was to play a pre-eminent part in the development of ancient civilization. The land is extremely rich in mineral ores, and when some accident had shown that from the gaily coloured stones of the hill-sides there could be got malleable copper which made tools infinitely more convenient than chipped or polished flints, the primitive Asiatic was quite ready to exploit his discovery and to barter his produce with his neighbours in the south. Here, then, emerged a culture of which the primary basis was not agriculture but industry and commerce. At a later date we shall recognize in the east of Anatolia the important kingdom of Urartu with its traditions of skilled work in metal, in the centre the warrior race of the Hittites and in the west the people of Arzawa; but at the beginning of the Copper Age there was no such definite pattern and the Hittites certainly had not yet entered upon the scene.

The historic Hittites were not, strictly speaking, a race but a confederacy some of the elements of which we may assume to have been indigenous; but the more important were immigrants of Indo-European-speaking stock; it is agreed by most authorities that they must have originated in the Caucasus,

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and according to their own account they came into Anatolia from the south,[14] establishing one capital centre after another until at last—towards the close of the third millennium BC—they reached Boğazköy in the Halys basin and made that the seat of empire.

The Russian excavator B. A. Kuftin, working in the Caucasus area, has found at Igdir (in the upper Araxes valley) the stratified remains of a culture which, starting in the Neolithic stage, lasted into the Chalcolithic and was then, towards the end of the fourth millennium, characterized by pottery of a very individual sort, generally black, highly burnished, and decorated with patterns both impressed and in relief, and also by curious horseshoe-shaped terra-cotta hearths adorned with human figures and heads (Fig. 59). There is no later development; the sites were deserted.[15] Well on in the Chalcolithic Age, in the Amq plain on the middle Orontes, the villages of the people using the local type of painted pottery are found to have been destroyed and in the buildings which replaced them we find the black burnished relief ware (Pl. 14, a) and the horseshoe-shaped hearths which had been developed by the people of Igdir. At a still later date, in the Early Bronze Age, the same Araxes pottery suddenly appears in Syria and Palestine, above the burnt ruins of the houses of the earlier population. A few sherds of the pottery have been found in central Anatolia; one complete vase of the sort occurs in each of the 'Royal' tombs of Alaca Höyük, and a degenerate version of the Araxes hearth was still in use in the nineteenth century BC at Kultepe, 150 miles south of Boğazköy. If we may connect the archaeological evidence with tradition, as is probably justifiable, then we can follow one of the early 'mass migrations' which play so important a part in the history of the Middle East. Displaced for some reason from their original home an entire people (how numerous we cannot say) set out in search of a new. They could not travel due west, partly because of the natural difficulties of the mountain chains, more because of the opposition of the wild mountaineers (even in historic times these were a constant thorn in the flesh of the Hittite kings, who could never conquer them) so they pushed south and once on the steppes turned westwards across Upper Mesopotamia; when at length they came to the rich Amq plain, held only by poor villagers, they put those to the sword and settled down on their lands. After many generations they in their turn were expelled, this time by their Syrian neighbours on the east, and while some fled down into Syria and Palestine others went eastwards and northwards into Anatolia and very gradually, defeating opponents or making allies as they went, advanced to their final resting-place on the Halys.

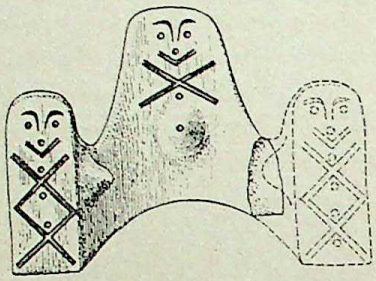

FIG. 59. Igdir: hearth or pot stand (after Hood).

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*Syria and Palestine*

Another folk-migration, of the details of which we know nothing, affected the coast of Syria and Palestine. That coast is cut off from the interior by the Amanus and Lebanon mountain ranges for the northern part and by the Judean hills in the south; the mountains, then thickly wooded, were an effective barrier isolating what is at best a narrow belt of maritime plain, with the result that while the interior—whether we think of the Aleppo plateau stretching down the Orontes to Hama, or of the Damascus oasis, or of the desert steppes south of Damascus, haunted by Beduin nomads—is typically Asiatic, the Syrian coast is purely Mediterranean. The Neolithic inhabitants were indeed a branch of Mediterranean man—actually some of their pottery finds its closest parallel in Crete—but at a very early date, presumably in the Chalcolithic period but perhaps towards its close, a Semitic people, the Phoenicians, came into the country and, wherever the natural features of the coast offered the chance of a harbour, founded cities. According to their own traditions the Phoenicians had originally lived on the shores of the Persian Gulf[16] and it is tempting to believe that that is true, although there is an almost complete lack of material evidence to support it; in any case they had already arrived by the time when we first got any real knowledge of Syria. Phoenicia never formed a political unit. Each of the cities along the coast was an independent state under a king (usually with a Council of Elders at his side)[17] who was really a merchant prince, for the cities were founded for and lived by international trade. From the outset their relation to Egypt was close, for they alone could supply the cedar and hardwoods which were needed for the temples and palaces of Egypt but did not grow in the Nile valley, but still more important for our purposes was the traffic in ideas. The Egyptians themselves traced not a little of their religion back to the Syrian coast; later on, Plutarch quotes the story of the body of Osiris being brought back by Isis[18] from Byblos; whereas then the Phoenicians throughout their history did much as middlemen to help the growth of Mediterranean civilization on its material side, at the beginning they may have made to it a moral contribution of lasting value.

*Crete*

The island of Crete, like that of Cyprus, received its first Neolithic inhabitants as immigrants from the south coast of Asia Minor. But whereas Cyprus was never able to boast of more than a derivative culture whose progress was due to successive borrowings from Asia Minor, Crete was to develop a brilliant civilization of its own which a little later spread to the mainland of Greece. Naturally this advance was not made on the sole initiative of a small country isolated 'in the midst of the sea' (as the Egyptians described it); in very early days immigrants from Egypt driven out, perhaps, by the civil wars that led to the establishment of the First Dynasty there, brought new ideas to the island; the Cretans themselves were a seafaring people and their ships,

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visiting Asiatic and Egyptian ports, kept them in touch with mainland progress; but it was the native genius of the Cretans that transmuted all that they learnt from abroad into something original and peculiar to themselves, so that in the first half of the second millennium Cretan civilization was in many ways the finest of the old Mediterranean world.

## BRONZE-AGE HISTORY

Such was the grouping of the Middle Eastern peoples when towards the close of the fourth millennium BC the introduction of metallurgy established new demands and brought into new relations the hitherto self-contained and isolated regions in which Neolithic man had been content to live. It happened that the two potentially most wealthy and powerful stocks, the Egyptians and the Mesopotamians, inhabited areas in which metal was almost or entirely lacking, so that it had to be imported from abroad. Moreover, the same two countries produced no good timber, and as urban civilization began in both to replace the village culture of primitive times the public buildings that symbolized the importance of governments called for just those hard woods that native resources failed to supply; so these too had to be imported. International trade therefore flourished and brought into contact lands that had heretofore not known each other. Mining prospectors travelled far and wide overseas; and since at home fuel was too rare and expensive a thing to allow of smelting, it was not worth while to import raw ore; the ore had to be smelted in the lands wherein it was mined, and therefore the natives of those lands had to be instructed in the technique and had to be paid for practising it;[19] and payment could best be made in manufactured goods from the home country. Just because trade meant barter, because the cedar wood of Lebanon and the frankincense of Arabia, the gold, the ivory and the semi-precious stones had to be exchanged for the finished works of Egyptian or Mesopotamian craftsmen, fashions and ideas circulated freely. The countries which produced the raw materials but, until those came into demand, had lagged behind those blessed with a more fertile agricultural soil, now derived not only riches but mental stimuli from the network of barter that connected them with the main centres of progress. By the end of the third millennium BC Palestine and Syria, Persia and Anatolia, had to some extent caught up with the great river valleys. Already in the Chalcolithic period sea traffic had brought the eastern Mediterranean into touch with the eastern part of the European mainland; the Danube valley served as a natural trade-route and thence contacts could be made with the north and east also; in southern Russia and the eastern Ukraine the megalithic stone burial-cists of the Neolithic Age had been replaced by hut-graves which witness to Aegean influence. But the alternative route was not less important. Soon after 2000 BC the hut-graves were in their turn replaced by catacomb-graves, a type which seems to have originated somewhere to the east of the Sea of Azov; they are the graves of a

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people whose wealth consisted in sheep, horses, cattle and camels, who were not tied down to a sedentary village life but were nomadic. In their earlier home, living close to the centre of metallurgy in the northern Caucasus, they had learnt the art of metal-working, and they now introduced it to the regions north of the Black Sea; the Bronze Age begins now in that area, and the uniformity of type of the awls and daggers found in the graves of the Ukraine is proof that all were derived from a single source. But the wandering smiths did not stop there. For them the open steppe country was but a corridor facilitating east-by-west movement; they went on beyond it, and beyond the loess-land of the western Ukraine; and their cultural influence can be traced into central Europe. In the course of the second millennium BC the knowledge of how to win metal from the ore by smelting, of how to alloy copper with tin and make ductile bronze, and of the shapes of tools, weapons and ornaments that could be cast in it, was widely diffused over the dark continent.

The international trade in metal was to have far-reaching consequences. Prospectors were impressed by the possibilities of the lands seen in their wanderings, and reports were spread abroad of countries which might make the fortune of settlers or could offer shelter and home to displaced peoples. Thus the Italian peninsula was invaded by a Latin race which descending through the north-eastern passes drove before them, or assimilated, the old Chalcolithic stock and exploited the rich copper-mines of Tuscany. Far-off Britain had in about 1900 BC received a wave of immigrants, the so-called 'Bell Beaker' people, who came in from Brittany and from the Lower Rhine; stories of the copper, the tin and the gold of the British Isles reached the Continent, and two centuries later a second wave of immigrants from the same areas, metal-workers trained in the traditions of Bohemian Aunjetitz and of northern Italy, brought the Bronze Age proper into Britain. The immediate results of these folk-movements was of local rather than of general significance —the huge megalithic monuments of Carnac in Brittany and Stonehenge in Wessex have had little direct influence on the history of man. But already the foundations were being laid, in Britain and in Italy, of the great cultures with which later volumes will have to deal at length.

In tracing the history of human progress it is easy to point to a limited number of centres, or societies, where the advance was most marked and the standard attained was highest. But it is impossible to attribute the origin of civilization to any one region or people. No single region provided all the material elements requisite for civilization; no single people invented all the techniques essential to civilized life. The raw materials that were lacking in one country had to be imported from another, and with them came the knowledge of techniques; because of the need for international trade of this sort, new ideas originating in one area spread quickly and easily, to be adopted and improved upon by the independent genius of different peoples. Civilization is indeed due to diffusion, but to the diffusion more of ideas than of models, and not from a single source but from many. Undoubtedly in this

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exchange of knowledge the individual played a very great part. To recognize the value of a new idea and to adapt it to the peculiar character of his own culture is the work of individual imagination, and it is where natural conditions guarantee the necessities of life and afford that leisure which encourages individuality that the best advantage is likely to be taken of imported inventions. This is why the fertile river valleys of Egypt and Mesopotamia outstripped their neighbours in cultural progress, and the same must be true of the Indus valley and of that of the Huang Ho, though we are unable, through lack of documentation, to follow the process there with the detailed assurance that is possible in the nearer east; there too trade contacts and the resultant traffic in ideas must have enriched the resources of a primitive but gifted people.

The two countries for which material evidence is reasonably abundant are Mesopotamia and Egypt, and it is precisely there that the 'traffic in ideas' is best illustrated; it is to their record that we must look if we are to understand the growth of civilization generally.

*Egypt*

As we have seen, Egypt, divided into two areas and later organized into two kingdoms lying to the south and the north of the Fayum basin, had entered the Chalcolithic phase of culture at the beginning of the Naqada II period; that phase was one of astonishing progress. At its beginning Egyptian culture could be described as an advanced barbarism; before it ended, at the close of the proto-Dynastic age, irrigation of the fields had been introduced, towns founded and temples built, a system of writing had been developed, a calendar had been devised, the basis of which was to endure to the present day, and art was already taking the form which was to be characteristic of Ancient Egypt so long as Ancient Egypt lasted.

The Egyptians of later times attributed much of this change to 'the Followers of Horus' who, coming from the east, introduced new arts to the Nile valley. The tradition refers to the incoming of those Asiatic Semites of whom mention has already been made, and it is well founded; what the Egyptians did not remember but the archaeological evidence makes quite clear is that the immigrants brought with them the knowledge of what had been achieved by the superior civilization of Mesopotamia. That there was direct intercourse between the two countries cannot be asserted. In any case it could not have been by land, for the barrier of the Syrian desert which throughout history forced land transport to make the long detour by way of the Fertile Crescent rules out any such possibility, and the evidence of early settlements proves that the strangers came first to southern Egypt, landing on the Red Sea coast and following the Wadi Hammamat to Koptos. But even so they need not have been Sumerians—indeed they certainly were not if we are correct in calling them Semites. It is more likely that they were middlemen, seafarers of the Persian Gulf, who were in close touch with Sumer: there is

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reason to think that there did exist such a people, that from which the Phoenicians claimed descent, the people who supplied Sumer with bronze from the Oman mines and made out of the local stalagmitic calcite stone vases which the Sumerians bought and the Egyptians imitated in their native alabaster. But whoever were the carriers, Egypt did get the Mesopotamian goods and ideas. Stone carvings such as the famous slate palettes (Pls. 31, b and 33, b) (the oldest belong to the close of the pre-Dynastic period and the series continues into the First Dynasty) are unmistakably Sumerian in inspiration, and the stone mace-heads are of a type borrowed from Mesopotamia; clearest evidence of all, the cylinder seals, which are a hallmark of Mesopotamia and were used there for over two thousand years, now for a brief space make their appearance in Egypt, where they are obviously incongruous. But one loan was of permanent importance. In Sumer the art of writing was already known. Egypt did not copy the Sumerian characters but did borrow the idea behind them, the wonderful invention whereby pictures of things could be made to stand not for the things themselves but for the sounds of their names, so that by their aid you could translate human speech into something concrete and enduring; she elaborated her own syllabary, and with the standardization of the script Egyptian civilization properly so called began.[20]

Connection with Mesopotamia broke off and was not to be renewed, except for casual diplomatic missions, until the armies of the two countries met in war more than two thousand years later; but its effect upon Egypt had been incalculable. Of the two proto-Dynastic kingdoms the northern was under strong Libyan influence (reliefs in the pyramid-temple of Sahure of the Fifth Dynasty actually show Libyan princes wearing the uraeus frontlet of the Pharaohs) and was probably therefore less civilized and less well armed; and it was the southern kingdom that, thanks to the use of the Red Sea–Koptos route, benefited most from the wisdom of the Sumerians. Perhaps as a result of this, the southern kingdom under 'Menes'[21] was able to conquer its neighbour and to unite the crowns of Upper and Lower Egypt. 'Menes' and his successors, the kings of the First Dynasty, were not mere raiders, out to destroy an enemy's country; they were 'Lords of the Two Lands'; they assumed the double crown, the Red and the White; to the northern royal symbol of the bee they added the southern symbol of the papyrus tuft, and they shifted their capital north (to Thinis near Abydos) so as to preserve a due balance between the two realms; in theory at least the delta was allowed to keep its identity in spite of amalgamation with Upper Egypt. In the opening years of the third millennium BC the fusion was complete and Egypt had become a unity. The different elements of its population made each its own contribution to the national consciousness, the lessons to be learnt from abroad had been absorbed, and the country was equipped for the shaping of its own destiny; there is scarcely any feature of later Egyptian civilization that is not adumbrated in the First Dynasty period. On the lines thus laid down Egyptian civilization, art, religion and thought developed throughout the Old and

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Middle Kingdoms, attaining its height in the Twelfth Dynasty;[22] then, in the eighteenth century BC, progress was suddenly arrested by the invasion of the Hyksos. What is really most important during this period is not what happened in Egypt but the influence exercised by Egypt on the Near East. The powerful Pharaohs of the Twelfth Dynasty, Sesostris III and Amenemhet III, instead of contenting themselves as their predecessors had done with extending their dominions to the south, thus emphasizing the position of Egypt as an African power, faced about and invaded Syria, overrunning the entire coastal country from Gaza in the south to Ugarit in the north and probably even beyond that to the Amq plain.[23] Nor was this merely a military promenade or a raid undertaken for the sake of booty. Certainly a vast amount of booty was taken from the wealthy cities of Palestine, but Amenemhet III at any rate seems to have aimed at a permanent overlordship of Syria, reducing the local kings to vassalage and appointing Egyptian commissioners to control their politics. It was a new political departure, to apply to an alien people the scheme of government which was traditional in the Nile valley; it involved Egypt in an imperialistic venture which brought it into contact and would eventually bring it into conflict with the other imperial states of the Middle East. Egypt was no longer isolated, as it had been for many centuries, but was open to foreign influences of thought and fashion while, on the other hand, Syria, whether its rulers welcomed or chafed against Egyptian suzerainty, could not but assimilate some measure of Egyptian culture.

The first repercussion was as violent as it must have been unexpected; the Nile valley was invaded by the Hyksos with such success that for a short time Hyksos chiefs bore rule as Pharaohs, their royal capital being established at Avaris in the eastern delta. It is difficult to say who these 'Hyksos' were. The name itself tells us nothing—it is not a patronymic and is probably a corruption of a phrase meaning perhaps 'Ruler of Countries'. The tradition preserved by Manetho, that they were Arabians and Phoenicians, is not likely to be far from the truth, but it does not imply that they were a single race or the people of a single country. That they were Semites does seem to be certain, and certainly they came into Egypt from the East. Since, after they were driven out of the Nile valley by Ahmose I, they were able to hold out in Palestine and south Syria for no less than six score years we may assume that the base of their power was there; the choice of a site for their capital on the extreme eastern border of Egypt agrees with that; the fact that their capital was defended by a *glacis*, a characteristically Syrian type of fortification, is further evidence; Hyksos scarabs occur frequently on Palestinian sites, and an alabastron lid engraved with the name of the Hyksos king Khyan, which was unearthed at Knossos, may well have been taken to the island in a Phoenician ship. The probability is that the anti-Egyptian elements in the Phoenician cities which Sesostris and Amenemhet had subdued took advantage of the weak rule of the Thirteenth Dynasty Pharaohs to raise the standard of revolt and, calling in to their aid the desert Beduin, made themselves

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masters of Egypt. It was a short-lived triumph, for in 1580 BC, perhaps little more than a generation after their incoming,[24] they were driven back into Asia by the founder of the Eighteenth Dynasty and are no more heard of under a common name—i.e. the confederacy broke up, the Beduin retired to their deserts and the Syrian townsmen to their several city states. But the invasion was not unimportant. Under the Hyksos Egypt and Syria were still subject to the same king, though the old relations between them were reversed; in that the Hyksos rulers aped the state of the former Pharaohs, the Egyptian civilization won yet a firmer hold on the south Syrian towns, but at the same time they overthrew many of the Egyptian temples and introduced what seems to have been the exclusive worship of their own god, identifying him with Set-Sutekh, the god of Upper Egypt who was later to become the favourite of Ramses II and patron deity of the royal city. Of much more far-reaching consequences was the fact that the Hyksos taught the Egyptians the use of the horsed chariot,[25] an innovation which revolutionized military tactics, made possible the creation of the Egyptian empire, and by introducing into the army a *corps d'élite* to which only the rich aristocracy could afford to belong accentuated the class distinctions in Egyptian society.[26]

Revenge for the barbarian invasion came with the great Syrian expeditions of Thutmose I and III. Already Amenhotep I had invaded the country and pushed as far north, possibly, as the Euphrates; but his was little more than a punitive raid, and it was left to his successors to effect a permanent conquest.[27] Thutmose I met with little resistance in the south and he fought his main battle in the extreme north, in Naharain, and set up his trophy on the bank of the Euphrates, making the boundary of Egypt 'as far as the circuit of the sun'; undoubtedly he organized some form of provincial government in all the principal cities.

The powerful state of Mitanni, which had been established in the Hurri lands of northern Syria (see pp. 387–9), was naturally not pleased to find a new and great empire establishing itself as an immediate neighbour on the west; the most obvious means of defence was to encourage a buffer state between Mitanni and the armies of the Pharaoh. Political intrigues started at once, and when the death of Thutmose I gave the signal, revolt broke out over the whole country from northern Palestine to the Great River. The domestic troubles that ensued between Thutmose III and his queen Hatshepsut afforded the rebels a welcome respite of some twenty years, and by the time the Pharaoh was in a position to assert his claims on Syria, the king of Kadesh—the chief town, it would seem, of the surviving Hyksos—was at the head of a confederacy which included all the northern cities and disposed of forces not unevenly matched with those of Egypt. In the spring of his twenty-second year, about 1480 BC,[28] Thutmose III led his army across the Egyptian frontier; less than a month later he won the hard-fought battle of Megiddo; he beleaguered and finally received the surrender of Megiddo and before the campaigning season ended he had recovered the country as far as the

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southern slopes of Lebanon. Kadesh however was still unconquered, and four years were spent in consolidating the south country before Thutmose ventured against his chief enemy. Then Kadesh fell; but more time was needed to reduce the towns on the northern coast, and it was only in his thirtieth year that Pharaoh could lead his army down the Orontes; Aleppo fell, then Carchemish, and the warriors of Mitanni 'fled like a herd of mountain goats', and with the capture of Niya the recovery of the Naharain province was an accomplished fact. Before this, the newly-risen power of Assyria had sent presents to the king of Egypt; now, while he hunted elephants in Niya, envoys from Babylon brought him gifts of lapis lazuli, and from the heart of Asia Minor the great king of the Hittites sent silver and precious stones. The adventure of imperialism had plunged Egypt into world politics of which in her sequestered days she had never dreamed.

The mention here of Babylon and Assyria, of Mitanni and the Hittites, implies great changes since the beginning of the third millennium in all the Middle Eastern lands.[29]

*Sumer and Akkad*

We have seen that in southern Mesopotamia by about 3000 BC Sumerian civilization was fully formed, and very soon after that date it may be said to have reached its zenith. The overthrow of the alien rule of the Jamdat Nasr people was at once the symbol and the cause of a nationalist resurgence which brought out all that was best in the mixed population which now called itself Sumerian.[30] For some time the spirit of independence manifested itself in a centrifugal policy. Now that the overlord who had forcibly united the country was removed the old city states reasserted themselves and Sumer was divided up into a number of petty kingdoms, each under the patronage of its local god. The fact that they were extraordinarily prosperous did not obviate, more probably it encouraged, war between neighbours, generally due to quarrels over water-rights or to rival claims to some fertile territory irrigated by the elaborate system of canals different states might hold in common. At last, about 2600 BC, the kings of Ur who were very wealthy and had been enabled by their wealth to form and equip an army which as a fighting force must have been well above the standard of its contemporaries, subdued all the other states and set themselves up as rulers of the whole of Sumer. The First Dynasty of Ur lasted for five generations, then the suzerainty passed to a number of other states in succession, but while these constant wars must have weakened the morale of the people they seem not to have interfered greatly with their material prosperity. But they paved the way for foreign conquest.

The Semitic and Semitized peoples of northern Mesopotamia, whose history from this time onwards suggests that they were more virile than the southerners but less original and less imaginative, had readily absorbed the superior culture of their neighbours; on the material side they were completely

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Sumerianized, but they preserved their own language (though they wrote it in Sumerian script) and they preserved their own ethnic spirit. About 2385 BC Sargon,[31] an energetic king of Akkad, took his part in the inter-dynastic feuds that rent the south country, overran the land and established himself and his sons as kings of Sumer and Akkad. It did not mean the end of Sumerian civilization, for the Akkadians kept its traditions faithfully; but in very few respects were they able to carry them any farther, and the admixture of the Semitic element and its ultimate preponderance were to result in cultural stagnation.[32]

The traditions were indeed so firmly rooted that even the invasion and occupation of the country by a barbarous tribe failed to eradicate them. From somewhere in the mountainous area of the north-east there came down the Guti (about whom we know really nothing); they overthrew the dynasty of Akkad but were too uncivilized to set up any regular form of government in its stead, and so lax was the administration that local governors of the old stock were able, after the first shock of war, to carry on the rule of their city states in comparative independence. When, after more than a century and a half of foreign tyranny and disorder, Sumer and Akkad regained their freedom and the Third Dynasty of Ur ushered in an era of material prosperity greater than had been known hitherto, the amalgamation of the north and south countries appeared to be complete; official posts were distributed impartially between Semites and Sumerians, and the same laws applied equally to all. But while the civilization, which was essentially southern, was crystallizing into stereotyped forms, the more energetic northern race was now taking the lead; business, even in the old cities of Sumer, was passing into Semitic hands and the Semitic language was beginning to oust the Sumerian.[33] Shortly before 2000 BC the Third Dynasty of Ur was overthrown by an invasion of the Elamites and the Amorites. Some of the cities which resisted, Ur in particular, were savagely destroyed, but the conquering Amorites were aiming at sovereignty and, having given their subjects this salutary lesson, were quite ready to repair the damage they had done and to pose as beneficent rulers. So Sumer, though it had lost its independence, was allowed to follow the old paths and, since trade flourished as much as ever, was perhaps content, the more so because government control over the bankers[34] and merchants was relaxed and individualism was allowed freer play. The northerners on the other hand, farther removed as they were from the seat of Amorite sovereignty, established first at Isin and later at Larsa, were not prepared to accept permanent subordination. At Babylon a local dynasty set itself up and gradually secured the adhesion of the Akkadian Semites, with the result that the city now for the first time acquired the leading position which it was to boast for many centuries. In 1783 BC Hammurabi, the sixth king of this Babylonian line, turned his attention to the south. There a fresh Elamite invasion had installed an Elamite, Warad-Sin, upon the throne of Larsa; his son, Rim-Sin, though old, was a formidable adversary, but after

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prolonged warfare Hammurabi defeated him and succeeded to the imperial title 'King of Sumer and Akkad' which Rim-Sin, following Sumerian tradition, had adopted after his capture of Isin and of Nippur. Actually Hammurabi's empire extended from the Persian Gulf to north of Nineveh, from the Elamite mountains to the borders of Syria on the west. His title of 'King of the Amorites' and his ascription of his victories to the god Dagan 'his Creator' illustrate the pride that he felt in his West Semitic blood; but culturally he was a descendant of the Sumerians, and in the Prologue to his famous Code of Law the holy cities of Nippur and Eridu are placed above Babylon itself. Sumer and Akkad had little love for one another—Ur was to head a revolt against Hammurabi's son and to be destroyed in consequence —but the Semite in Babylon showed himself to be an adaptor, not a creator; he was the prophet of Sumerian culture and in the sphere of intellect and art merely perpetuated the achievements of the race which politically he displaced and in the end absorbed.

The dynasty of Hammurabi came to an inglorious end. His son Samsu-iluna was able—though hardly—to cope with rebellion within the empire, but he had no strength to deal with foes from abroad. A raid by Kassite tribesmen from the east was followed by others, until by constant infiltration the Kassites had secured a firm footing in the northern country. But the crushing blow fell from elsewhere. In some year between 1600 and 1580 BC the Hittites of Boğazköy under their king Mursilis marched down the Euphrates and stormed and sacked Babylon and carried off the image of Marduk. The Babylonian empire broke up, and while the south country passed under the control of the 'Kings of the Sea Lands' who found security in the impenetrable marshes of the lower delta, the Kassites, who probably were of Indo-European stock,[35] installed themselves in the cities of the north as the aristocratic caste and the country's rulers.

*The Hittites*

The Hittites had now become an important kingdom. If, as has been suggested, their original trek from the Caucasus was by way of the steppe country of northern Mesopotamia and was interrupted by a long sojourn in the Amq plain we should be able to understand some of the problems which otherwise must baffle us. They must have mixed a good deal with the older inhabitants: and when they moved on into Anatolia some of them must have stopped behind. This would explain the fact that from a very early date Carchemish seems to have had a strongly Hittite character, and that in the Amq plain there was always a pro-Hittite party opposed to the north Syrian or the pro-Egyptian factions. A later tradition, perhaps authentic, says that Naram-Sin, son of Sargon king of Akkad, fought against a coalition of seventeen kings, one of whom was a king of Hatti—and in 2200 BC the Anatolian Hatti had not reached Boğazköy and were in no position to wage war in north Syria. Another of the seventeen allies was a king of Amurru

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whose name is supposed to belong to the 'hieroglyphic' language of the (later) Syro-Hittites; this again may bear witness to the passage of the Hittites through the Amurru land.

For some time after their entry into Anatolia the Indo-European tribes (not all of whom had as yet adopted the collective name 'Hatti') were occupied in carving out for themselves by their conquest of the Asianic 'proto-Hatti' separate principalities, at least ten in number, which were virtually independent although the chief of one of them was distinguished as 'The Great Prince', a title which was always to be preserved as that of the head of the confederacy. Naturally there was rivalry for the honour, and rivalry might lead to civil war. We hear first of the 'Great Prince' of the city of Puruskhanda; later on two kings of the city of Kussura, Pitkhanas and his son Anittas, subdued all the other cities, including Hattusas, and transferred their capital to Nesa, apparently thus advancing northwards. If, as is probable, King Anittas was responsible for the destruction of the colony of Mesopotamian merchants that had long been established just outside the walls of the city of Kanish in Cappadocia (a dagger inscribed with his name has been found there[36] in the town ruins) then his reign should be dated to about 1900 BC. A later king, Labarna, claims to have extended his frontiers to the sea, conquering the kingdom of Arzawa. His son Hattusilis I moved his capital northward from Kussura to Hattusas (Boğazköy)—the move may have been connected with the unification of the clans under the common name 'Hatti'—and for the first time led a Hittite army beyond the frontiers of Anatolia; he invaded Syria and reduced to vassalage the kingdom of Yamkhad, of which Aleppo was the capital city and Alalakh in the Amq plain a subject state. The next king, Mursilis I, overthrew Babylon and put an end to the First Dynasty; this was in about 1585 BC.

The victory of Mursilis was of far-reaching importance. In the first place it laid the foundations of the Hittite power in Syria, the maintenance of which was to be the settled policy of future kings and brought them into direct conflict with Egypt. In the second place by eliminating Babylon as a military force it made possible the Kassite invasion of Babylonia and the rise of Mitanni. A period of weakness which set in in the latter days of the Hittite 'Old Kingdom' postponed the first of these results but facilitated the other.

*The Aryans*

In the early part of the second millennium BC there took place one of those mass movements of people which every now and then have changed the course of history. Tribes of Indo-European stock, originating probably in south Russia, left their homes for some reason that we do not know and, passing through the Caucasus, poured eastwards and westwards (Map XII), an armed host accompanied by their wives and children, in search of new places wherein to live; and they were determined to live not as outcast settlers in an alien land but as masters in a land of their own. In the view of many scholars

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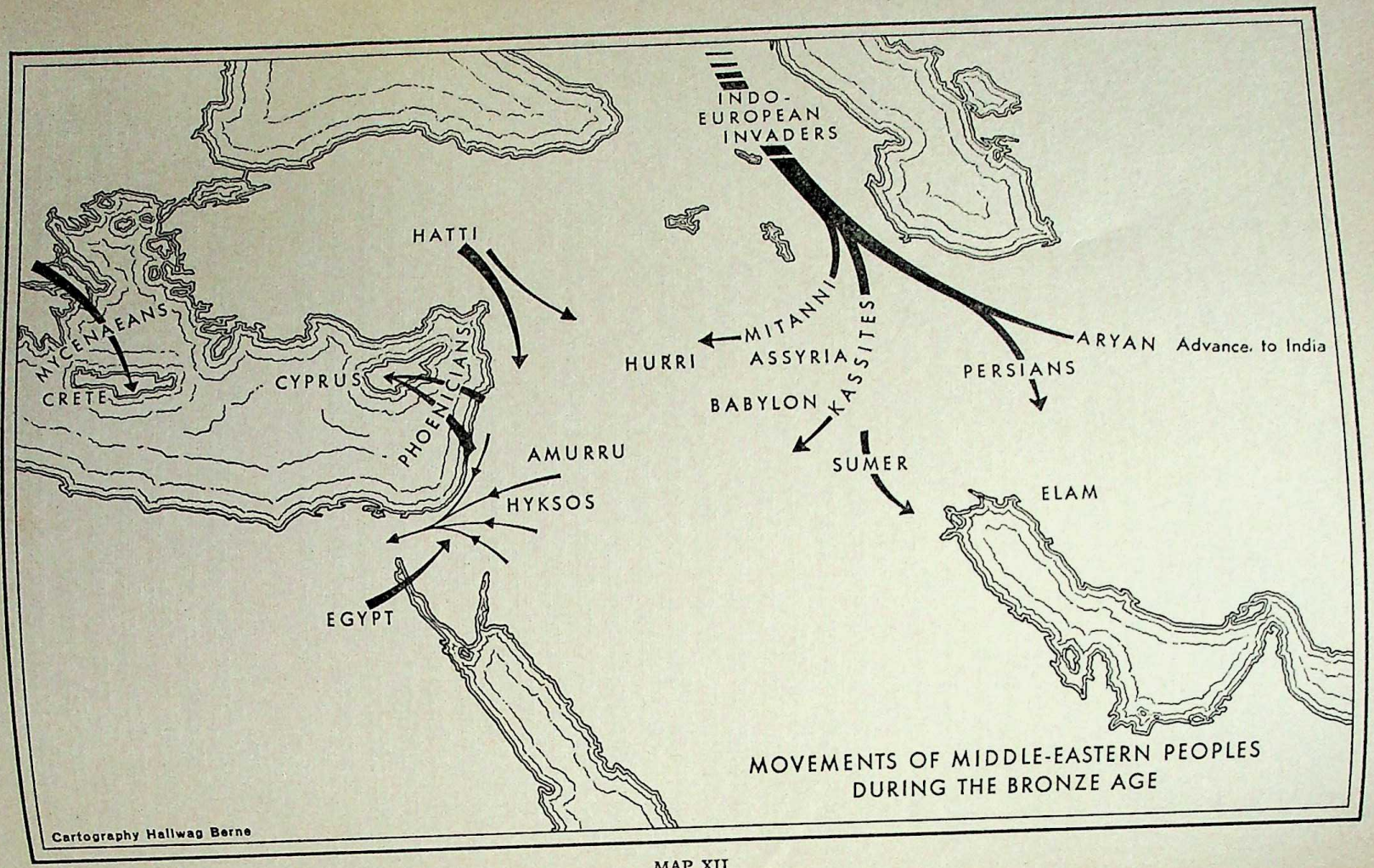


MAP XII

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one branch, perhaps the advance party, whom we know as the Kassites, penetrated into Akkad, and in due course their leader seated himself upon the throne of Babylon, founding a régime that was to endure for five and a half centuries; one branch came to a halt in northern Persia. One wave of the 'Aryan Invasion' in time broke through the mountain barrier of northern Baluchistan into India; there they found still existing (this is generally assumed to have been round about 1500 BC) the great cities of the Indus valley whose merchants had up till now maintained their touch with Mesopotamia, and they overwhelmed them—the *Rigveda*[37] is the epic of the destruction of one of the great cultures of the ancient world.[38] Yet another group of these Indo-European adventurers—who may have entered the country originally by means of 'peaceful penetration', for we have no hint of any warlike conquest and their numbers do not seem to have been so great as to make conquest probable—succeeded in establishing themselves as the ruling aristocracy of the Middle Hurri region. These 'Mitanni' supplied just that energy and initiative which their new subjects in that area had lacked hitherto, and with their advent a new Great Power arose in the Middle East. In the fifteenth century BC the Mitanni kingdom extended from Nuzi beyond the Tigris to the Mediterranean, from the head waters of the Khabur to the Syrian borders of Egypt; it could menace the authority of Pharaoh and fight on equal terms with the Hittite rulers of the New Empire. The Mitanni, like their brethren the Kassites and the Aryan wreckers of the Harappā civilization, seem to have been a semi-barbarous people culturally far inferior to the nations which they vanquished; they did indeed introduce the worship of the 'Aryan' gods, and (what was more immediately important) they introduced the horse to Asia Minor and popularized the breeding of it there; but apart from this they could contribute but little to progress. The success of the Mitanni as an independent power in northern Mesopotamia did not last very long; but even the temporary unification of the 'Fertile Crescent' and its exploitation meant that the long-established culture of the Hurri received a greater authority and could impress itself more directly on the neighbouring states. The Hittite kings of the New Empire invariably took to themselves Hurri wives; Hurrian scribes and magicians frequented the Hittite court, and the Hurrian gods were admitted to the Hittite pantheon, so that the deities represented on the famous rock reliefs of Yasilikaya are called by Hurri instead of by Hittite names.

MAP XII

*Egypt and Syria*

We have seen that the victorious campaigns of Thutmose III had brought the greater part of northern Syria under the control of Pharaoh and that it was thanks to the active intrigues of the Mitanni king that Egypt had had to withdraw; the natural result was that the north Syrian states which had been vassals of the Hittites took the prudent course of changing masters; Hattusas lost all its Syrian possessions. Rebellion is infectious, and the Anatolian states



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in their turn were encouraged to turn upon the Hittites; the Gasgas, the wild mountaineers east of the Halys basin, sacked Hattusas itself; Arzawa invaded the western regions and occupied the Hittite frontier towns with at least the moral backing of Pharaoh; the position of the Hittite empire seemed desperate, while the upstart kingdom of Mitanni could now ally itself to Egypt as an equal and seal the alliance with a royal marriage.

The different characters of two individuals reversed the situation, Akhenaton of Egypt, engrossed in religious reforms and in the distractions of court life at his new capital Akhetaton (Tell el Amarna), had no interest at all in imperial politics or military adventures. In Hattusas arose a king, Suppiluliumas, whose ambition was equal to his generalship. After one set-back at the hands of the Mitanni he renewed his attack, captured their capital, installed his sons as kings of Aleppo and Carchemish, extended his frontier southward to Lebanon and set a puppet of his own on the Mitanni throne. The kingdom of Kizzuwatna made peace and an alliance with him. He reconquered the kingdom of Arzawa. By the end of his reign he was in possession of an empire more extensive than any ruler had yet boasted, stretching from the Tigris to the Mediterranean, from Syrian Kadesh to Hattusas and perhaps beyond Hattusas to the Black Sea. The sun of Egypt was for the time being in eclipse; the rising power of Assyria was as yet scarcely a danger and in any case was kept at a distance by the buffer state of Mitanni; the Hittites were the Great Power of the Middle East.

Apart from politics the effects of these conquests were of lasting importance. The Hittite element which seems always to have existed in northern Syria was undoubtedly strengthened by the Hittite rule, which was never very onerous provided that people submitted to it. In the principal temples of north Syrian towns Hittite gods were now worshipped and dedications were made by Hittite kings; the Kassites had introduced the horse into Mesopotamia and the Hittites had been quick to profit by this and to develop the new tactics in war which chariotry made possible, and now the Syrian kinglets (as well as the Pharaoh of Egypt) followed their example; the Hittites again were users of iron and although even for them it was still a rare and costly thing, brought in by trade from the Armenian highlands, the knowledge at least of this strange metal spread from them southwards to the Levant and the way was thus paved for its regular adoption. The commerce of ideas between the Anatolian rulers and their subjects in north Syria was to have no small part in a later epoch when the Syro-Hittite civilization was to fill the gap left by the obliteration of Hattusas; but in the meantime it helped much towards that intellectual and artistic union which was to link together the peoples of the eastern Mediterranean in the immediately succeeding age.

*Cyprus*

When Thutmose III organized his newly won Syrian province, General Thutiy, appointed governor of the north countries, had included in his

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jurisdiction 'the isles in the midst of the sea'. It is true that thanks to the sea power which Pharaoh enjoyed by reason of his mastery over the Phoenician cities on the Syrian coast he could overawe the king of Cyprus and reduce him to vassalage; but the same cannot have been true of Crete. Cyprus, with its fertile soil, its timber-forests on Mount Troodos and its precious copper-mines, was a rich country, full of possibilities; but its people were singularly unimaginative. They initiated nothing. Their cultural history, of which we can speak with confidence seeing that it is illustrated by a wealth of archaeological material, divides itself into a series of well-defined and disconnected phases the characteristics of each of which are imported from abroad, and each phase is in itself static. The Cypriots, time after time, adopted an alien fashion and imitated it with an adequate amount of technical skill, but they did not progress beyond their model, repeating it until a new model was imposed upon them. They may have helped to spread ideas and inventions westwards, but those ideas and inventions were borrowed by them from the east. Even their trade with the Syrian coast (which is within sight of the island) was carried for the most part at least in Phoenician bottoms, and the business side of it was in the hands of a Phoenician merchant colony who had their own city on the island and their own king. Except as a metal-producing country, Cyprus played little part in early history.[39]

*Crete*

Exactly the reverse is the case in Crete. The natural resources of the island were relatively small—it possessed no minerals, and only the centre of it was really fertile, the mountains at its eastern and western ends being rugged and inhospitable; but its inhabitants had just that genius and energy which the Cypriots lacked. Coming originally from the Anatolian coast they seem to have been even in Late Neolithic times in contact with the marsh-dwellers of the northern delta of the Nile; there is some evidence to show that when Egypt was unified under 'Menes' some refugees from the delta fled and settled in Crete, and this may have given to the native population the impetus that was needed to start them on the road to civilization. There have been found on Cretan sites imported Egyptian objects dated to the Third, the Sixth and the Thirteenth Dynasties, so it is clear that trade connections with Egypt were maintained throughout the early period; but the Cretans, even if they borrowed, did not merely imitate but transmuted their borrowings into something new and peculiar to themselves. Being islanders they were mariners, too, and could freely visit other countries for the exchange of goods and ideas. But their island lay far beyond the reach of the great land-powers, Mesopotamia, Egypt and Hatti, so they could develop on their own lines without interference, and whatever they brought home they improved. In this remote island they built up a civilization which from many points of view was the most magnificent of the ancient world. They derived their architecture from

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Asia, but no Asiatic building could vie with the palace of Minos at Knossos; they had their own system of writing; as workers in metal they were unequalled, and their potters produced painted vases of a quality and a beauty elsewhere unknown. Naturally such objects of art were exported, and examples of them are found in Egypt (Pl. 14, b) and on the Syrian coast; but the Cretans were not content merely to trade with the markets of the established kingdoms and empires of the east; their ships sailed westwards and northwards to the Cyclades and farther still, to the Greek mainland, and there they founded colonies of their own. By the middle of the fourteenth century BC cities such as Mycenae and Tiryns were flourishing centres in which Minoan art was gradually being adapted to suit the taste of a subject population. Judging from the signs of destruction at Phaestos and other Cretan sites the kings of Knossos had before this time made themselves masters of the whole island, and that by violent means. The same imperialistic spirit may have turned against them their Greek vassals; in any case the fate that normally overtakes imperialism put an end to the dynasty of Minos. About the middle of the fifteenth century 'Mycenaeans' from the mainland, who had for some time been infiltrating into Knossos, finally gained the mastery of the city; then, about 1400 BC, possibly with their connivance, a wave of invaders seems to have overthrown and destroyed Knossos and the other Cretan cities. From that moment Crete lost all its old importance and became merely an outlying province of Mycenaean Greece.

The first Mycenaean immigrants were a people alien from the Cretans by race, speaking a Greek tongue; but they adopted and perpetuated the Minoan traditions, at least up to a point, though they were quite incapable of the artistic triumphs of the old Minoan 'Palace Style'. But they, and the later invaders also, were admirable craftsmen of the second-rate, and whereas the luxury of Knossos may have made the Minoans rather indolent, the Mycenaeans were full of energy and keen business men; favoured by their geographical position they, and their kinsmen in Cyprus, plunged headlong into the trade of the eastern Mediterranean. Bands of Mycenaean workmen came into Egypt to decorate the new capital that Akhenaton built at Tell el Amarna; a colony of Mycenaean merchants established themselves in the harbour town of Ugarit on the north Syrian coast; Mycenaean pottery is found in the Phoenician coastal cities, in the Amq plain and as far inland as Damascus; even the Palestinian potter was obliged by his clientele to copy the painted vases that came from Crete; Egyptian wall-reliefs and paintings show us 'Keftiu' works of art which may come from Crete itself or from Mycenaean colonies such as Ugarit but in either case prove the popularity and the ubiquity of Mycenaean goods. The Mycenaeans, by reason of their commercial activities, entered fully into what seemed likely to become the common civilization of the Middle East, so much so that figures of Oriental gods such as the Syrian Resheph[40] are found in Crete, in Tiryns and Mycenae. The Asian element that plays so important a part in Greek religion and

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mythology is probably due to the Mycenaeans who, themselves a Greek-speaking people instructed in Cretan art, laid the foundation of classical Hellas.

*Egypt and the Hittites*

Suppiluliumas the Hittite, who had been careful to send his diplomatic congratulations to Akhenaton when the latter ascended the throne of Egypt, had soon taken advantage of the Pharaoh's weakness to win for himself the whole of Syria from Kadesh northwards—and that without any overt breach with Egypt. But that was not the sum total of Egypt's losses. The Phoenician coast and the entire south country down to the Negeb were before long in a state of utter chaos. The Amorite princes fought against each other and against Pharaoh indiscriminately, each trying to secure for himself loot and dominion; from the eastern desert the Khabiri[41] came to take part in the game; some entered the service of the warring princes as mercenaries, others formed bands and raided on their own account. Appeals to Akhenaton fell on deaf ears; one by one the cities were stormed or went over to the enemy, Simyra, Byblos, Berytus, Tyre and Sidon, Jerusalem and even Gaza were lost, and by 1350 BC the Asiatic empire of Egypt had ceased to exist.

The loss of Syria was a blow not only to the prestige but to the economy of Egypt; the king of Babylonia writes to complain that his merchant caravans have been plundered and cannot get through to the Nile valley. When 'the criminal of Akhetaton' died and in time an orthodox and powerful dynasty secured the throne of Egypt, the recovery of the lost provinces was an obvious necessity. In 1310 Seti I invaded Palestine, overcame the Amorite kingdom of the south, but failed to capture Kadesh; he had opened the caravan route, but had done nothing to dislodge the Hittites. Muwatallis of Hattusas recognized, however, that a trial of strength between the two empires was inevitable, and during the next twenty years of uneasy truce he fortified Kadesh to make it the southern bulwark of his realm; it was at Kadesh that in 1285 BC the imperial armies clashed. In spite of the boasts of Ramses II that he won a glorious victory it is quite clear that the battle was undecisive and if anything went in favour of Muwatallis, who was even able to advance his frontier towards Damascus, while Ramses marched straight home to celebrate a triumph. For the next fifteen years the war continued with varying success for either side, but Pharaoh claims to have subdued peoples as far north as Naharain and the Orontes valley. Probably both parties were by that time tired of fighting; probably both were rendered uneasy by the rising power of Assyria which threatened their eastern flank; at length, in 1269 BC, a new Hittite king, Hattusilis III, made peace with Egypt; the position in the Levant was stabilized and a royal marriage set the seal on a treaty of friendship.

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*Egypt and Libya*

Trouble was to come from an unexpected quarter.

In the last years of Ramses II (he was about ninety when he died) the Libyans began to push their way into the western delta. Possibly Hittite intrigue was in part responsible for this. The Hittite king, observing the terms of his treaty with Ramses, outwardly kept the peace with Ramses' son Merneptah and even called on the latter in the first year of his reign for shiploads of corn to relieve a famine in Anatolia. Nevertheless he certainly was behind a rebellion against Egyptian rule which broke out in Syria about a year later, a rebellion so serious that Askalon, Gezer and the tribes of Israel (now for the first time mentioned by name as being in Palestine) had to be crushed before anything could be done on the western border, and it was not until his fifth year that Merneptah could turn to deal with the Libyan king, who had advanced deep into Egypt with a regular army of occupation. The invaders were defeated with enormous loss and the danger was over for the moment.

But what is interesting is the fact that the Libyan army was largely composed of allies, or mercenaries, who were northerners from overseas, Sherden, Shekelesh, Turshu, Ekwesh—Sardinians, Sicilians, Etruscans and (perhaps) Achaeans—from Asia Minor and the islands. Clearly these were warriors and seafarers who could not find scope for their activities at home; they could sail the sea as merchants or pirates (the two trades running together), or they could lend or hire their services for any enterprise that sounded profitable; like the Norsemen of a later day they went in search of adventure.

We may connect with this Libyan interlude the unrest that was showing itself in Anatolia. There the Hittite king began to have trouble with his neighbour on the west, the king of Ahhiyawa, who was perhaps an Achaean; he was reckoned one of the four great kings who divided the Middle East between them, and though a mainland ruler he included some at least of the Ionian islands in his dominion. Whether he was in part the cause or himself one of the victims of what was to come we have as yet no means of knowing.

*The Peoples of the Sea*

In the fifth year of Ramses III of Egypt, 1194 BC, a fresh attack on the western delta was made by the king of Libya, again supported by allies or mercenaries from the north, and was defeated. But a far greater danger threatened from the north. A vast host was on the march. The movement began in Anatolia, or at least its first effects were felt there. It can only be supposed that the country had been invaded and it was pressure from behind that drove the entire population from their homes and forced them to seek some new land to be won by violence. For this was not an army but a congeries of peoples; some came by sea, skirting the coast; others marched overland with their womenfolk and children, travelling in heavy two-wheeled ox-carts, prepared to settle down in the conquered land; wherever they came

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they ravaged and burned and slew, and those that escaped the sword were enrolled in their ranks to swell the numbers of the fighting men. They sacked Hattusas, and we never again hear of Hittites in Anatolia; they sacked Carchemish and Aleppo, Alalakh and Ugarit and the Amorite kingdom of southern Syria; their fleet went across to Cyprus and wasted it; always they pressed on southwards, leaving destruction in their track, and so they came to the borders of Egypt. They were a mixed crowd, Danauna or Danaans (from Cilicia) and Peleset or Philistines, and the Sherden and Shekelesh, Turshu and Ekwesh, Lycians and many others. What drove them from their homes is not known, but their objective is clear enough. They all knew—it did not need the mercenaries returned from Libya to tell them—of that fabulously wealthy land that was irrigated by the Nile's flood, and deliberately, as Ramses rightly said, they advanced on Egypt, 'their hearts relying on their arms'; if they could not stop at home only the world's best land was good enough for them. The victory of Ramses saved Egypt. But just because the invasion failed it was one of the most important happenings in ancient history. The Peleset settled down where they had fought, in the coastal plain of Palestine; the remnants of the Hittites entrenched themselves in northern Syria, where they had long borne rule and had many friends, and gave a new impetus to the Syro-Hittite civilization. The breakdown of two colonial empires opened the gates of Syria and Palestine to the Assyrians and Babylonians. The other allied tribes made their way overseas and as Etruscans[42] and Sicilians introduced a new element and a new age into Italy, and it was perhaps now that the 'Dorians' came into Greece. The epic of Troy deals with one incident of the wars that shook the Asiatic and the Aegean world; but the real drama was set upon a far wider stage and had consequences that Homer could not guess.

## INDIA: THE INDUS VALLEY CIVILIZATION

In the present state of our knowledge it is not possible even to sketch in outline the political history of those eastern peoples whose contribution to world culture rivalled that of the Mediterranean races. In the cases both of India and of China civilization confronts us as an accomplished fact and literature throws no light upon its genesis or upon the political relations which may have influenced its growth. In the Indus valley we have a culture which is not without some contacts with the village cultures which are proved by archaeological stratification to be of older date, but it is so infinitely in advance of such and so markedly individual that it would hardly seem to have been evolved entirely from them; moreover, it is directly superimposed upon the remains of the older cultures in a way which suggests that it was introduced suddenly, and in the form which it was to preserve with no perceptible modification for the entire period of its existence. The skeletal evidence proves that the population of the Harappā cities was of mixed stock. Three of the skulls from

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Mohenjo-daro belong to the Proto-Australoid group and represent the type which forms the main element in the south and central Indian aboriginal tribes of the present day; these are the true Indians, and just because they were of the old native stock, whereas the Harappā culture seems to have no local precedents but is introduced as the result of the violent destruction of the old settlements, it can fairly be assumed that they constituted the lower classes in the social system of Harappā.[43] About 50 per cent of the skulls are of the dolichocephalio Mediterranean type very similar to those of al'Ubaid in Sumer, also to some from Baluchistan; with these are a few brachycephalic Alpine-type skulls and one which is typically Mongolian; disregarding the last as being foreign—and one would expect to find a few immigrants from the north-eastern hill countries—we may conclude that Mediterranean man played the predominant part in building up the Harappā civilization. A certain number of features in that civilization are common to it and to Sumer—e.g. the burnt-brick architecture and the use of bitumen—but in spite of that fact and of the skeletal evidence it cannot be maintained that the Harappā civilization originated in Sumer and was imported thence into India ready made. The archaeological evidence makes it tolerably certain that it was not developed locally in the Indus valley but arrived there already mature. The presence of Mediterranean man certainly suggests a western origin, as also does the fact that from the outset the Harappā people were familiar with the working of copper and of bronze, for that knowledge must have been derived from a country in which copper ore was available. Although, when once they were settled in the Indus valley, they may well have exploited the mineral resources of Rajputana—and discoveries in Gujerat supply evidence of their connections with that southern area—yet, before that, they are more likely to have got their material and their technique from the west, from the ore deposits in Baluchistan or in Persia; already one site in Baluchistan and one in Afghanistan (see p. 402) have given proof of direct contact between Sumer and the Indus valley. But this does not at all justify us in attributing the Harappā culture as a whole to any Sumerian tradition. We have seen that Sumerian civilization was in part at least due to people who came into the Euphrates valley from the east; the source whence the seeds of progress were brought into Mesopotamia may have inspired also the eastern civilization which was ultimately to establish itself in the valley of the Indus; and something in the nature of a common origin might account for the later contacts traceable in the two countries. It is quite impossible to say where the Harappā civilization grew up; but by the time it took over the river-land and the cities of Harappā and Mohenjo-daro were built it had acquired a character of its own, essentially different from that of Sumer and, indeed, essentially Indian.

And of its subsequent history we know nothing. It is fully mature on its arrival and thereafter it stagnates; its buildings are destroyed by floods and rebuilt time after time, but 'from top to bottom of the accumulated layers of debris no change can be detected in the content of the material culture';

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primitive features persist unimproved, and the technological advances made by Sumer in, for instance, the casting of socketed metal weapons have no influence upon India in spite of the commercial ties between the two peoples. Those ties were closest, it would seem, in the time of Sargon of Akkad, in the twenty-fourth century BC, but two hundred years later the signs of contact become few and far between; the growing isolation of Harappā may be the cause, or the effect, of the gradual impoverishment of the people to which the buildings of the upper levels bear eloquent witness. The civilization endured for the greater part of a millennium; its character is illustrated by a vast collection of monuments of every sort; but of its history no more can be said than that decadence set in some time before its complete destruction at the hands of the Aryan invaders, probably towards 1500 BC.

## CHINA

As in the case of India, so in China also we are confronted with a civilization which has already attained a very high level and is concentrated in a relatively small area of northern China comprising the provinces of Hopei, Shantung, Anhwei, Shansi, Shensi and Honan. Throughout this area excavations and casual discoveries have brought to light bronze vessels and pottery of the Shang period and some, especially those from the Honan province, seemingly older than those of Anyang, the main site. But even if we can recognize, tentatively, an earlier phase of the Shang civilization we are still unable to explain its origin; it is surrounded by peoples still in the stage of barbarism, and its antecedents remain unknown. It is true that orthodox Chinese tradition tells of a Hsia Dynasty of seventeen or eighteen kings supposed to have ruled over China from 2205 BC till 1765 BC, when it was overthrown by T'ang the Successful, a Shang ruler who founded the Shang Dynasty, which continued in power until it in its turn was overthrown in 1122 BC by the Chou.[44] But there is no material evidence whatsoever to prove the existence of a Hsia Dynasty. The earliest literary evidence that we possess is that provided by the excavations at Anyang, and it dates from the latter part of the Shang Dynasty. Anyang can confidently be identified as the site of 'the great city Shang' (later, by the Chou people, called Yin) to which the capital was removed by P'an Kêng, 1401–1374 BC. Therefore we cannot expect to find anything earlier than his reign, and in fact we do not; of the thousands of bone inscriptions none, apparently, goes back to the days of P'an Kêng, and even his two immediate successors are but doubtfully represented, the earliest dated texts being of the reign of Wu Ting; the written history of China as given by contemporary documents begins only in the fourteenth century BC.

But those documents do confirm the orthodox tradition regarding the names and genealogy of the later Shang rulers. When then the bone inscriptions cite, as they do, the names of earlier kings known to us from the traditions we are justified in assuming that the orthodox view regarding the



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dynasty as a whole may be accepted and its history be taken as going back to *c.* 1750 BC (see p. 412, note 44) although we have no actual knowledge and no recognizable monuments for its initial three and a half centuries. The case of Hsia is less simple. Although the Chou kings had a good deal to say about the Hsia Dynasty they were speaking of something very far removed from themselves in time and, because they were exploiting the story for purposes of political propaganda, they may well have distorted it not a little. In the Shang tradition Hsia seems to have been not so much a dynasty as a state which down to the time of T'ang the Successful controlled the rulers of the Shang tribe; but that its power even over its professed vassals was limited is shown by the fact that Hsiang T'u, the twelfth Shang prince before T'ang, is described as a conqueror who spread his dominions beyond the seas. Consistent with this is the fact that in the list of T'ang's conquests Hsia appears merely as one of a number of states incorporated by him in his dominions, and there is no reference to any former overlordship.

In later times, in the eighth to sixth centuries BC, the term Hsia is used to mean not a dynasty or a state, but 'Chinese', and is applied generally to the various states lying north of the territory of Ch'u. Ch'u, which occupied both banks of the Yangtze and reached half-way up to the Yellow River, was not 'Chinese', but was gradually coming into the sphere of Chinese culture. Hsia therefore was a cultural term. Nor was this a novel gloss upon the word. It has been remarked that the old Chou people used it for propaganda purposes; they were themselves by origin part of the Jung and Ti barbarians, and when they were 'converted' they called their new western territories part of 'the Hsia region', adopting the term because it implied a cultural and traditional justification of their domination—and it is in precisely that sense that it persists into Chou times. The theory that barbarians could be amalgamated into the Hsia group by adopting Chinese culture is wholly consistent with the view that Chinese culture had originated with the Hsia people in pre-Shang times. 'That there was a culture which could properly be called Chinese, even on a linguistic basis, at the early date assigned to Hsia is altogether probable, for the Chinese writing system as we find it on the Shang bones of the fourteenth century BC is amazingly complex, embodying almost every principle of the formation of characters which is in use today; it must have been preceded by many centuries of development.' Creel,[45] from whom the above paragraph is quoted, summarizes the question by saying, 'The evidence warrants us in concluding that while there was not a Hsia dynasty, in the traditional sense, there was a state by this name. And the fact that the term Hsia was later used so persistently to mean "Chinese" and "the Chinese states" in a cultural sense leads us to infer that this state was the leading exponent of Chinese culture in its day. As such it may have exercised political sway over a fairly large territory, and its cultural prestige may have given it a certain hegemony even beyond its proper borders. We have an example of this in the case of the Chou people, whom we know to have admired Shang

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culture and considered it superior to their own before and even after they conquered the Shangs. In a cultural sense, then, it is perhaps not completely erroneous to look upon Hsia as a Chinese dynasty. The term has perhaps this much basis of truth, that the torch of Chinese culture was passed from Hsia to Shang to Chou.'

The historical existence of Hsia is a matter of prime importance if we are to explain the origins of Chinese civilization.

The district in which Anyang lies is formed of the rich loess plain on the north-west bank of the Huang Ho, some 200 miles south of Peiping; protected on two sides by the river and on the west by a long mountain chain whose slopes provided heavy timber for building and wild game for the hunt, whereas the level valley was ideal for the growing of grain and for pasturage, it was admirably adapted to the development of a wealthy city. But it was not the birthplace of a civilization; the monuments of a highly developed and long-established culture are imposed upon the wreckage of a Neolithic settlement; obviously the development had taken place elsewhere.

Excavations at Chengchou and Loyang have produced material which is held to illustrate an earlier phase of the Anyang civilization—thus, the bronze ritual vessels are identical in type, as are the arrows and spear-heads, but the oracle bones are not inscribed, the buildings are similar but smaller in scale, and the pottery is generally similar but has none of the white kaolin decoration characteristic of Anyang. Such differences might possibly mean no more than that these were provincial sites, but may well indicate an earlier date, as suggested by the excavators. But even so, the civilization is already well developed, and in the crucial matter of metallurgy is as mature as it is seen to be in the Anyang phase. Its genesis therefore is still to seek.

The Chinese tradition which states that Anyang (Yin) was selected by P'an Kêng as his capital—a tradition which the archaeological evidence amply confirms—says further that the Shang people were not natives of this region but immigrants who after various wanderings settled in it, but tells us nothing as to whence they came. Because no local origin has yet been discovered for the Shang civilization, it has been suggested that it was introduced ready made by an aristocracy of immigrants from the far west, i.e. from the Mediterranean area, who imposed themselves on and ruled by force over the Chinese natives of the region. That theory, however, while purporting to explain the Chinese tradition, disregards the very serious difficulties of chronology and derives virtually no support from the archaeological material—on the contrary, the bronze vessels, which represent the finest art of the workers in metal (which is *ex hypothesi* an imported art) show a decoration which is purely Chinese, and their forms can be traced back to the pottery of Neolithic China (Pl. 14, c). Were the theory true, the supposedly earlier sites of Chengchou and Loyang might have been expected to produce some evidence of the invaders, but in no single object from those sites has there been detected any indebtedness to Mediterranean influences. It is true that Dr Li Chi[46] would

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relate the designs upon a Yin *tao-tieh* mask to Mesopotamian art of a thousand years earlier and finds an astonishing resemblance between an Anyang clay vessel and similar vessels discovered at Mohenjo-daro in the Indus valley and at Jamdat Nasr in Mesopotamia; but it would be rash to deduce an invasion from what need not bear witness to anything more than the passing of stray goods by way of barter through many hands and over great distances; in all other respects the uniform evidence of the tomb objects would seem to be decisive. Still more conclusive is the fact that the skeletal remains from the Anyang cemetery—and such are so numerous that some of the skulls must be those of the Shang aristocrats—uniformly belong to the Mongoloid branch of mankind and forbid the suggestion of any invasion by people of any other type.

Faced with this indisputable evidence some scholars have, not unnaturally, regarded the Shang civilization as indigenous, the result of the complex interaction of many elements, amongst which the most important were the autochthonous proto-Chinese cultures.[47] Certainly, to underestimate the part played by those autochthonous cultures would be to misrepresent the whole character of the Shang civilization, which is essentially Chinese. But what differentiates it from them is, first and foremost, the fact that it is a Bronze Age civilization, and it is hard to believe that those Stone Age cultures could have been responsible for that momentous change. Metallurgy must originate in a country where metal is easily obtainable—which is not the case for most parts of northern China; but even so, the mere presence of ore is not enough for, as we shall see hereafter (p. 550) the smelting of the ore requires a degree of heat unobtainable by the simple means at the disposal of most primitive peoples. The art of working metal must have reached China from the west, where it was invented; if the first centre was, as we believe, in eastern Anatolia, the line of advance eastwards would have followed the oriferous deposits of the mountain chain through Khorassan and Bokhara to the Kizil Kum desert; directly or indirectly, the Chinese borrowed their metallurgical technique from the Middle East. If the Anyang bronzes are in every respect purely Chinese it is because Chinese craftsmen were using the technique of metallurgy in their own way; if by that time they had developed a school of metallurgy not only completely individual but also so well established that it was to dominate the whole future art of China, that can only mean that development had been going on for very many generations. This is where the Hsia tradition is of value. If the Shang people were indeed the cultural heirs of the Hsia, and if the emergence of the Hsia, as a dynasty or as a tribe, is rightly put at something like 2200 BC, then we arrive at a date consistent with that of the spread of metallurgical knowledge in the west and one which allows reasonable time for the growth of an idiosyncratic Chinese school.

But side by side with the marvellous bronze vessels, weapons and tools of Anyang we have the oracle-bones bearing a syllabic script which also is fully

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developed and must have resulted from the labours of very many generations. Chinese writing may indeed be almost as ancient as Chinese metallurgy—in fact, some scholars would deduce from 'Yao's Calendar', preserved in the Canon of Documents of Confucius, that it was already known by the beginning of the second millennium BC. Although our existing material is late, belonging to the latter half of the second millennium, it is at least possible, if not probable, that the Chinese took over the technique of metal-working and the art of writing not so very long after both had been invented in the west. Now to suggest that arts so complicated as these two were invented independently and at more or less the same time by two different branches of the human race having absolutely no connection one with the other would be stretching coincidence too far. There can be no question of 'conquest' or 'immigration' by Sumerians or any other west-Asian people; but the difficulty can be solved by assuming a spread of ideas, not necessarily of imported patterns, but of the basic principles or processes of the arts. Bearing in mind that the search for metal ores, suddenly become so precious, sent prospectors wandering far and wide, and that goods might travel in the way of barter very far afield, we may imagine that a tribe in western China, having even indirect contacts with the Middle East, might learn the possibility of using pictorial signs to represent sounds and invent its own set of characters accordingly, just as they would learn, perhaps at much the same time and possibly from the same source, the technique of melting and casting metal.[48]

Chinese civilization was certainly not imported wholesale from the west, but, on the other hand, none of the various civilizations of the Old World was produced in isolation. If we look at the New World we shall see in the central American civilizations of the pre-Columban period a lop-sidedness which has no parallel in the lands with which this volume deals. There a magnificent achievement in the arts (which spring from individual intuition in response to social conditions) accompanies a technological ignorance almost as abysmal as that of the Palaeolithic painters of Lascaux. In the Old World advance was far more balanced for the reason that the various centres of man's activity were sufficiently in contact, direct or indirect, for the knowledge of new inventions and techniques to spread from one to another; the brief sketch of the political history of the more creative communities which has been given above is primarily intended to suggest the possibility of the cross-fertilization of ideas which trade and conquest could effect.

## THE MIDDLEMEN

For the countries of the Middle East, bordering as they do one upon another, direct contacts were easy and the exchange of goods could introduce new models and new methods. Where greater distances are involved, as in the case of the Far Eastern countries, we may have to postulate middlemen concerning whom we may have little knowledge or none.

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In southern Afghanistan, on a site called Mundigak, some thirty miles north of Kandahar, French excavators have discovered remains which, when fully published, should throw much light upon this question of international contacts. In the upper part of the mound, in a level provisionally dated to *c.* 1600 BC,[49] there are huge granaries, with raised floors ventilated from below, which certainly seem akin to those of Harappā; in a lower level, attributed to the latter part of the third millennium, a great building in mud-brick with a façade of half-columns reproduces a type familiar in Mesopotamia and suggests Sumerian connections in the Uruk or the Jamdat Nasr period (Pl. 13, b). Again, farther south, superficial exploration at Mehi has shown that in Baluchistan in and before the time of Harappā there was a culture, the Kulli culture, which was in touch both with Mohenjo-daro and with Sumer; 'There is good evidence that trade exchanges did take place, and goods and even people found their way from the Baluchistan hills to the Indus plain', and not only are stone vessels of Mehi make fairly common on such sites as Ur and Erech, but the painted pottery manufactured in the Diyala region (near Baghdad) in about 2800 BC reproduces the Kulli style and motifs with such accuracy that one suspects the arrival of Kulli potters in Mesopotamia. Similarly, when we find at Ur and other Sumerian cities, and again in Egypt, 'alabaster' vases so exactly alike in form that they might be products of the same workshop, but those from Egypt are of the veined calcite from deposits on the edge of the western desert whereas the Mesopotamian examples are of stalagmitic calcite from the southern end of the Persian Gulf, it is difficult to avoid the conclusion that somewhere on the shores of the Gulf there was a settlement of skilled workers in stone who exported their vases by sea northwards and westwards, finding a ready market in Sumer and supplying Egypt with models which could be copied in the local stone.

Those countries which in the course of the Bronze Age made the most notable advance were not the only ones to contribute to civilization; indeed, their advance was only made possible by discoveries due to peoples of whom we know nothing whatsoever. The chief discovery, which gives to the period its name, was that of mining and working copper, and since no copper ore is available in the silt-formed valleys of the Nile, the Euphrates, the Indus and the Huang Ho, the dwellers in those valleys must have acquired the art from abroad. In historic times Egypt exploited the copper-mines of Sinai, her main source of supply, but that was because the value of metal had already been realized. The Neolithic agriculturalist of the Nile valley, hating and fearing the desert, would never have dared the dangers and the terrors of the journey to Sinai to look for a kind of stone that was no use to him when he found it; before he did that, he had to be convinced that copper was worth having. The Sumerian imported his copper and bronze; the latter came from Oman on the Persian Gulf, but the Sumerians did not exploit the mines themselves and, so far as we can tell, never owned them; themselves masters in the technique of metal-working they owed the technique and the metal to a

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people of whom no record is preserved. When, in the time of Sargon of Akkad, Mesopotamia was cut off from the source of supply in Oman, copper had to be brought in from the north, and, if one may judge from the Maikop treasure, a profitable trade began with the hill peoples west of the Caucasus; later on, the kingdom of Urartu was to rise into prominence there, but for the early period and for the beginnings of metal-working there is no history. The Harappā people brought the knowledge of metal with them into the Indus valley and there is nothing to show when or where they learned it, and so too with the Shang people of China. As soon as any one of the old agricultural groups, settled in the rich riverine plains and stocking their granaries with surplus foodstuffs, had discovered from the objects which barbarous mountaineers bartered for their grain the nature and the use of metal, mining prospectors scoured the known and the unknown world in search of independent sources of supply. The early traffic in metal opened up new countries, but it also brought the old countries into closer contact in that the traffic involved the spread of ideas and techniques as well as of actual metal; from now on, a new discovery made in one land could quickly become the common property of all, not necessarily by imitation but by adaptation. The exchange of goods by international trade could spur the imagination to novel achievements. Thus at Tell esh Sheikh, the site of a village lying on the route of the Amanus timber trade, people received payment for their wood in kind, and amongst the goods came the fine painted pottery of Tell Halaf and, later, as we have seen above (p. 371) that of the northern al'Ubaid type; very soon the local potters found that the plain black wares which had satisfied their clients in the past could not compete with the decorated wares coming in from abroad, and in self-defence they set to and produced a local painted pottery which while it utilized the technique and the motifs of both the foreign varieties copied neither but possessed a character altogether its own.

But while the import of foreign products contributed so much to the advance of civilization the part played by the carriers of those products was not less important; a great deal that was not for export could none the less be spread abroad by word of mouth—*volitat vivu' per ora virum.* Inventions such as that of the principle of phonetic writing, religious beliefs and mythological tales would be carried far afield by itinerant merchants, and together with the bartering of material things there went the commerce of the mind.

Amongst the carriers who helped to link together centres of culture geographically so far removed from each other that they might well be thought mutually inaccessible, some part must have been played by the inhabitants of the northern steppes. We know as yet very little about those peoples, and what we know would not warrant us in claiming for them credit for making any direct contribution of importance to the early stages of civilization except, indeed, the domestication of the horse, which is probably due to them; it was the nature of the country rather than the genius of its occupants that aided progress.

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A vast belt of open steppe extends from Roumania across the Ukraine and the Chersonese area to Kuban, eastwards by Astrakhan and Uralsk, and far beyond that to Mongolia. It is a pastoral, not an agricultural land, and its population was necessarily nomad, men living in tents or booths and constantly moving on as their flocks and herds exhausted the nearby pastures. To whatever race the population might belong—and they differed widely—the conditions of environment imposed a similar manner of life upon all alike, and their enforced wanderings brought them into contact and induced a degree of uniformity in their culture. Thus in the second millennium BC burials of the Andronovo type extend uniformly from the Yenisei to the Ural mountains; in the southern Urals cemeteries of this type present a series of peculiar traits indicating the impact of both western and eastern cultures; in the Late Bronze Age funerary barrows in Uzbekistan, near Tashkent, closely resemble those of the Ukraine, and bronze buckets found in the Ukraine graves are well known in the Kuban area and reappear in a columbarium at Igdir in Erivan, thus showing contacts with the metal-working centre of Urartu. Later in history we find the Scythians at the western end of the steppe zone making a lavish use of Greek works of art. And at the same time in western Siberia, between Biisk and the Altai mountains, the astonishing tombs of Pazyryk yield Chinese mirrors, Han chariots, Persian embroideries and carpets which may be either Persian or (less probably) Anatolian, while the actual bodies in the tombs show that in these nomad tribes the Indo-European element from the west and the Mongoloid from the eastern extremity of the steppe meet in a single household, just as the intricately stylized animal forms characteristic of Scythian art are equally at home in Mongolia and in the Crimea.

From one end of Asia to the other, along the northern fringe of the settled lands where cities were built and civilization flourished, the clans of fierce horsemen were always on the move; nothing was permanent for them except the one secret spot where were the tombs of their chiefs. But they were not out of touch with the civilized world. They coveted the objects of luxury which they had not the skill to make, and they could always obtain such by trade, selling their horses and their felts, embroidered by the womenfolk with their own animal designs; or they could raid the settled lands and carry off the spoil; and, because their forces were a standing menace, the rulers of the great countries to the south, emperors of China and Persian kings, would buy peace from them by sending rich gifts or giving their daughters in marriage to the tribal chiefs. In such ways the men of the steppe got to know what the city craftsmen could do, and that knowledge was passed along from clan to clan; some new invention, a novel type of weapon or ornament, learnt from neighbours at one end of the chain might ultimately reach neighbours at the other end and inspire the workers of a city very far from the place of its discovery. It is quite certain that throughout the Bronze Age new ideas spread widely and sometimes very quickly in spite of the great distances involved and of the

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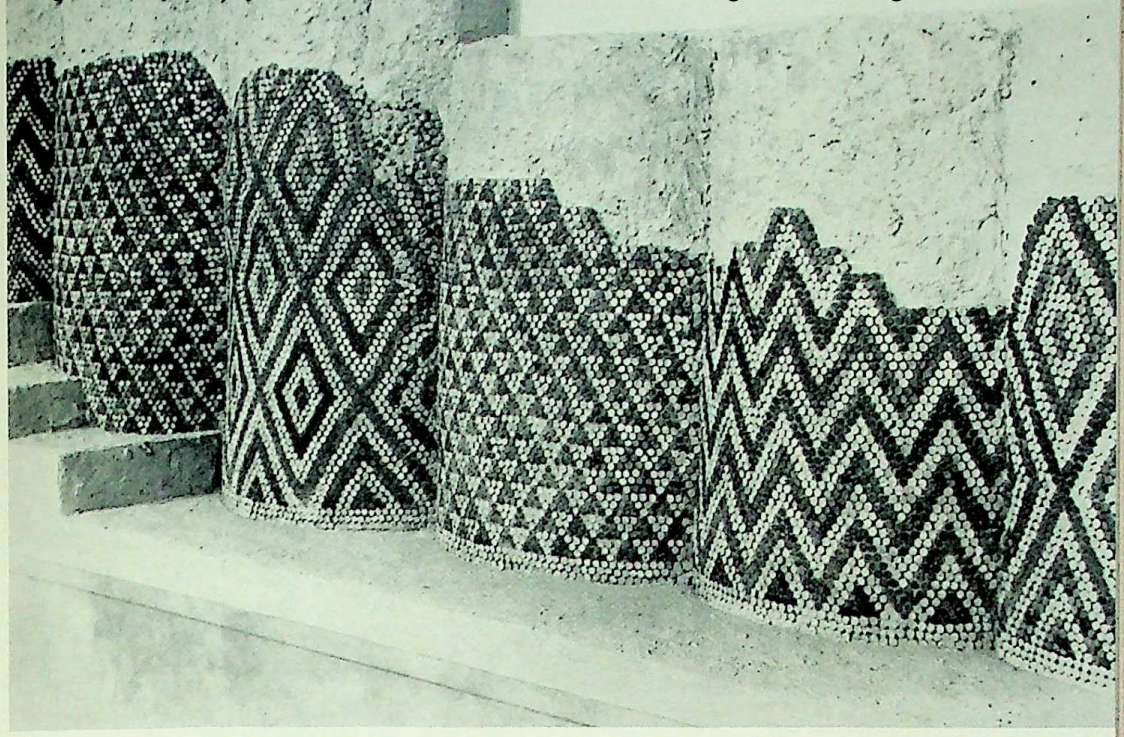

(a) [V.M.

13 (a) *Mosaic columns at Warka*
(b) *Mundigak: the Palace showing the half-columns and the stepped merlons*

(b) [Casal

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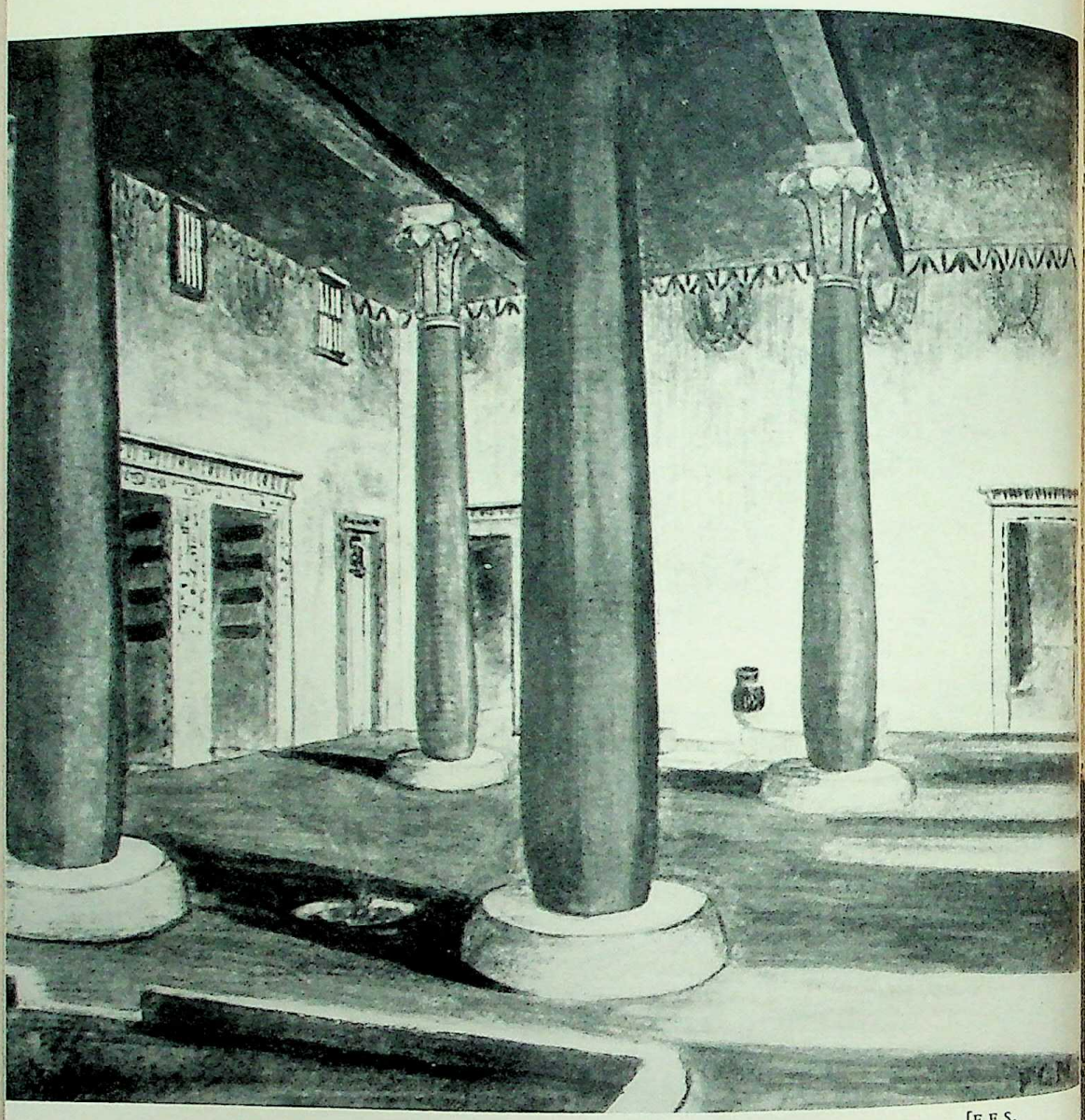

[E.E.S.

16 *Tell el Amarna: interior of house, central hall (reconstruction)*

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difficulties of transport across country; direct evidence for the early periods is lacking, but in view of what we can learn about later times it is reasonable to suppose that in some cases the steppe-dwellers were the middlemen for the dissemination of knowledge.

Our account began at the point at which man was emerging from his primitive savagery and with the invention of metal embarked upon the adventure of progress. In a brief factual sketch we have defined the main groups whose different characteristics and conditions of existence gave rise to different cultures and have emphasized not their individual contributions to civilization—that is to be our principal study hereafter—but rather their interrelations, trying to see what contacts of war and trade, of travel or of race migration, would make possible the interchange of cultural goods, and therefore of ideas, which promotes growth. Some of those original groups have flourished and endured, some have made their contribution to the common cause and have disappeared; new races, unconsidered at the beginning, have come to the fore, inheriting the traditions and sometimes usurping the territories of those that went before. Now the dawn of the Iron Age comes to a Middle East peopled for the most part by races which were to hold their own throughout history.

## AUTHOR'S NOTE AND DISCUSSION

(*Note 38, p.* 389)

*Sir Leonard Woolley*

Since there are differences of opinion on this subject something should be said regarding the alternative views. Some Indologists hold that the Rigvedic literature, and *a fortiori* the Rigvedic Age, go back beyond the twelfth century BC, and that the Aryan Indians were by that time at least a highly civilized people, as is shown by the character of their literature and religion. It is historically true that southern India was, by the third century BC, conquered by Aryan Indians and dominated by Brahmanical culture, and that the conquest had been preceded by a religious infiltration which resulted in the establishment of Vedic schools in the south. The earliest hymns of the *Rigveda* show the Indo-Aryans as established exclusively in the north-west of India and in eastern Afghanistan; it is argued therefore that, assuming the Vedic schools in the south to have been established in the seventh century (which is a pure assumption), five hundred years is a ludicrously short time to allow for the extension of Aryan domination over the rest of northern and central India, so that the Aryan occupation of the north-west must go back far beyond 1200 BC. The many different strata in the Rigvedic hymns prove that the period in which they were developed must have stretched over very many centuries, and reckoning back from the earliest Buddhist literature (which presupposes the *Veda*) and allowing for the vast lapse of time required by oral tradition for the earliest hymns to have taken shape in the Vedic schools and to have been compiled into a

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*Samhitā* or 'Collection', those hymns must be assigned to a date before 1200 BC. Further, since the grouping of the Aryan gods in the Mitanni texts from Boğazköy, with their particular forms of names, can be traced elsewhere only in the *Veda*, it is argued (*a*) that these are Indian Vedic deities, and (*b*) that the Mitanni leaders were immigrants from India, from which it follows that the Aryans had been established in north-western India considerably earlier than 1500 BC. In view of this overwhelming evidence that eastern Afghanistan and north-west India were occupied by the Rigvedic Aryans from about 2500 BC either their civilization was for a long time contemporary with the Harappā civilization or those Aryans, instead of having destroyed the Harappā civilization, were actually its authors.

The view adopted in this volume is that the Rigvedic hymns (regardless of the late date at which they assumed their present form) do embody early elements, as early as 1200 BC probably, in which the Aryan invasion of north-west India is rather vaguely remembered, and that the actual invasion took place somewhere around 1500 BC; the 'Vedic Age' may be said to have started at that time, the literature comes later, and the type of literature represented by the early elements in the hymns does not imply any high degree of material culture. The Harappā civilization was non-Aryan and was destroyed by the Aryans (there is indeed no other possible explanation of its destruction) who were a non-urbanized people and semi-barbarous.

That the Hindu civilization resulted from a mingling of that of Harappā and the Aryan culture seems certain; but that fact does not mean that the two flowed parallel for a long time; the Harappā element is due to the survival of Harappā people as slaves or serfs of the Aryan conquerors. The religious parallel between the Mitanni and the Indo-Aryans implies no more than that both came from a common stock, and that at no great interval of time. The length of time postulated for the Aryan conquest of (or infiltration into) central and southern India is greatly exaggerated—the conquest of the north-west need not have taken more than a few years, though that was a well-organized land with walled cities, whereas the rest of the country was probably easier to overrun; to speak of 'many centuries' is to strain all historic probabilities in support of a theory. Even if we grant (as we should) that the Aryans spent a long time consolidating their power in the north-west before embarking on further conquests, and accept for the conquest of the south a date 'perhaps as early as the seventh century BC' which is purely hypothetical, there is nothing in this to support an earlier date than 1500 for the incoming of the Aryans: 1500 BC is approximately the date given by archaeological evidence for the destruction of Harappā and Mohenjo-daro and if these were not the 'walled cities' destroyed by the Aryans to what can the Rigvedic hymns refer? For they are almost certainly the earliest walled cities of the Indus valley.

*Dr R. C. Majumdar*

The Aryans imbibed the pre-existing culture and assimilated much of it, the result being the growth of what we usually called Hindu culture. But this does not mean that the Aryan culture was insignificant. The *Rigveda* is the earliest manifestation, in a permanent and intelligent form, of the ideas and beliefs of mankind and their gradual evolution, and the culture reflected in it should find a prominent place in the history of the period 1500–1200 BC. The idea that the authors of the hymns of

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the *Rigveda*, or the people among whom they gained currency, were barbarous or semi-barbarous is not supported by M. Winternitz in his *History of Indian Literature*, I (Calcutta, 1927), pp. 63–75. See also my 'L'Antiquité et l'importance du Ṛigveda', *Journal of World History*, VI, 2 (1960), pp. 215–22.

*Sir Leonard Woolley*

Had my period gone down to 500 BC, I should have treated the *Rigveda* at length; but with 1200 BC as the terminus, that would have been wrong. The *Rigveda* was certainly not composed in its present form until much later, and it is impossible to say what stage of culture had been reached by the Aryans at 1200 BC; a description based on the *Rigveda* and applied to the period 1500–1200 BC would be an anachronism unsupported by any evidence whatsoever; the culture reflected in the *Rigveda* is itself that of a later period, and of the 'gradual evolution' of that culture we can speak only in a summary (which would be most in place if given for the fourth–third century BC); the poem does not help us to trace its evolution in dated steps.

*Professor Ralph E. Turner*

The *Rigveda*, according to Stuart Piggott, *Ancient India* (Penguin ed.), pp. 255–6, was composed 1400–1500 BC (Piggott accepts the dating of Max Müller), While accepting the *Rigveda* as a genuine document on archaeological grounds. Piggott points out that the archaic Sanskrit in which it is written makes it an imprecise and limited source. Within these limits the *Rigveda* gives us a general impression of the life of the Aryans, a pre-urban, and in this sense barbarian people. Theirs was an agricultural economy which includes the growing of a grain crop, but in which herds of cattle and flocks of sheep and goats are of prime importance. The Aryan society was formally divided into a threefold grading of warriors, priests, and artisans—*Ksatriyas*, *Brahmans* and *Vaisyas*—but the concept of caste was not yet known. The Aryans were among the first to introduce the idea of rapid transport made possible by the domesticated horse. Ox-drawn four-wheeled carts were used for farm work, and light two-wheeled chariots drawn by specially bred horses were used for sport or warfare.

## NOTES TO CHAPTER I

1. Professor I. M. Diakonoff suggests that climate is not a primary factor in encouraging work. In Neolithic times man had to work hard enough to survive in any climate. The tools and means of survival he had developed by that time could yield him surplus production under certain conditions (in the alluvial lowlands); but not in others (dense woodlands) where his stone implements were not adequate to clear a sufficient area of arable land or get a sufficient harvest.

   In support of Sir Leonard Woolley's position, see Ellsworth Huntington, *The Climatic Factor* (Washington, 1914), *Civilization and Climate* (New Haven, 1915), *Mainsprings of Civilization* (London, 1945) and S. F. Markham, *Climate and the Energy of Nations* (London, 1942).

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2. Both Professor John A. Wilson and Professor I. M. Diakonoff feel that the process was not as sudden as suggested by Sir Leonard Woolley. Sir Leonard takes the view that while the process of evolution was progressive, its final phase, and the results achieved, can be considered relatively sudden, particularly if we bear in mind the extremely lengthy span of this evolution as a whole.

3. The desiccation of Egypt and, more generally speaking, of the present desert zone surrounding it, began as early as the end of the Pleistocene (Palaeolithic) Age [see K. S. Sandford, 'Palaeolithic Man and the Nile Valley in Nubia and Upper Egypt', University of Chicago, Oriental Institute, *Publications*, No. 17 (Chicago, 1933); G. W. Murray, 'The Egyptian Climate, an Historical Outline', *Geographical Journal*, Vol. 117 (December, 1951), pp. 442–3].

4. Professor J. Leclant stresses the still highly theoretical character of the hypotheses put forward concerning the earliest settlement of Egypt. Anthropological analysis of the very earliest tombs is still at a very early stage; see Andrzej Wiercinski, 'Introductory Remarks Concerning the Anthropology of Ancient Egypt', Société de Géographie d'Egypte, *Bulletin*, XXXI (1958), pp. 73–84.

   The various migration charts put forward remain hypothetical and based on speculation, rather than on true archaeological observation.

5. Professor John A. Wilson points out that the approach of the desert to the Nile valley has destroyed the evidence on which this statement rests.

6. Professor I. M. Diakonoff feels that any people placed in the same conditions would achieve similar results. There are no ways of checking what a non-hybrid people might have done—if indeed the Egyptians were a non-hybrid people, which is by no means certain.

7. The theory of a single 'flood' cannot be accepted without discussion. The flood was not a cosmic disaster. Certain archaeologists have, moreover, reported other floods dating from different periods and in different locations.

8. Professor F. Schachermeyr doubts that there was another invasion at the beginning of the Uruk Age. The changes in pottery are due rather to the introduction of the potter's wheel and the production of metal vessels imitated by the potters. Sir Leonard Woolley feels, however, that his own position is supported by archaeologists who have specialized in Mesopotamia.

9. See S. N. Kramer, 'Sumerian Mythology: A Study of Spiritual and Literary Achievements in the Third Millennium BC', American Philosophical Society, *Memoirs*, XXI (Philadelphia, 1944).

10. Professor I. M. Diakonoff refuses to apply the word 'class' to a conquered people or tribe when speaking of pre-urban times. Class division, in the sense of the place of a given group in the system of production and in relation to property, did not exist until the 'Urban Revolution'.

11. Dr D. C. Baramki considers it purely hypothetical to presume that the people of Uruk adopted the language of the people of al'Ubaid, since we are completely ignorant of the latter's language.

12. According to Professor I. M. Diakonoff, there is little proof that Mari was ever a Hurrian city. It does, however, appear that the Hurrians were sufficiently numerous in Mari to have warranted the inclusion in the local archives of a number of texts in their own language; see Fr. Thureau-Dangin, 'Tablettes hurrites provenant de Mari', *Revue d'Assyriologie et d'Archéologie Orientale*, Vol. 36 (1944). Later on, Hurrian material becomes more abundant; see E. S. Speiser, 'The Hurrian Participation in the Civilization of Mesopotamia, Syria and Palestine', *Journal of World History*, I, 2 (1953), pp. 318–19.

13. Professor Diakonoff considers it probable that the Hurrians and the Hittites adopted the cuneiform writing of the Semites of Syria and northern Mesopotamia. Reference may also be made to the bibliographies in V. Istrine, 'L'écriture, sa classification, sa terminologie et les regularités de son développement', *Journal of World History*, IV, 1 (1957), p. 15; and David Diringer, 'Problems of the Present Day on the Origin of the Phoenician

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Alphabet', *Ibid.*, pp. 57–8. Professor Diakonoff refers to the paper read by Th. V. Gamkrelidze at the XXVth International Congress of Orientalists, Moscow, 1960, in support of his position.

14. Any reconstitution of the very earliest history of the Hittites must be based exclusively on the examination of pottery. As has been pointed out by Professor E. Laroche, there exists no written Hittite tradition pointing to their place of origin. Attempts have been made (e.g. F. Sommer, *Hethiter und Hethitisch* (Stuttgart, 1947), to prove that they retained memories of some eastern, Caspian, origin.

15. Recent exploration (C. A. Burney, 'Eastern Anatolia in the Chalcolithic and Early Bronze Age', in *Anatolian Studies*, Vol. VIII, 1958) has shown that this ware is far more widely distributed than had been assumed. The sites on which it has been noted range from the middle Araxes northwards to the Kura basin and southwards to the western shore of Lake Urmia and are very numerous to the west of Lake Van, while there is a further group in the neighbourhood of Malatya. Kuftin's excavations seemed to show a local development of the ware, and since the other sites are known from surface remains only, his views should hold good pending proper excavations elsewhere. So too his chronology is not upset by the fact of wide dispersion, for the type may have been elaborated in its original homeland some centuries before it was imitated far afield. In the text Kuftin's views are adopted, with the *caveat* that they may have to be slightly modified by discoveries yet to be made.

16. The tradition according to which the Phoenicians came from the Red Sea (and perhaps also from the Persian Gulf) has little foundation beyond the references in Herodotus, I, 1; VII, 89, and in Justin, XVIII, 13, and is therefore of debatable value. While still accepted by O. Eissfeldt ('Phoiniker', in Pauly-Wissowa, *Realencyclopaedie* XX, 1, col. 353–5) it is rejected by the majority of scholars, and by W. F. Albright in particular.

17. This elaboration was suggested by the remarks of Professor Diakonoff.

18. Professor John A. Wilson and Professor Jean Leclant both stress that no Egyptian text states explicitly that Isis came to Egypt from Byblos. Modern commentators base themselves mainly on the famous text of Plutarch and on new interpretation of older evidence in the light of this text. See S. Herrmann, 'Isis in Byblos', *Zeitschrift für Aegyptische Sprache und Altertumskunde*, Vol. 82, 1 (1957), pp. 48–55.

19. According to Professor I. M. Diakonoff, evidence that ore was found by mining prospectors and not by local people is scanty; and evidence for the employment of hired labour is also slight, it being more likely that the mines were worked by slave labour. Sir Leonard Woolley's contention that there were mining prospectors from the more advanced cultures is, however, supported: see C. F. Hawkes, *The Prehistoric Foundations of Europe* (London, 1940) and T. A. Rickard, *Man and Metals* (New York, 1922), p. 202. Slave labour appears to have been extensively utilized on ancient mining projects. For work in Egyptian mines in Sinai and in Nubia, see H. Kees, *Kulturgeschichte des alten Orients*, I, *Aegypten* (München, 1933), pp. 126 sq., and Professor J. Černý, *The Inscriptions of Sinai*, II (London, 1955), pp. 14 sq.

20. Sir Leonard Woolley's reasons for attributing to Sumer priority in the invention of writing are given in detail in Chapter VI, Pt. II, p. 635 sq. The question of the priority of Egyptian or Sumerian writing is still far from settled. It is possible only to note that both were in use at the end of the fourth millenary. See D. Diringer, *The Alphabet: A Key to the History of Mankind* (2nd ed., London, 1948), pp. 58–9. As suggested by Sir Leonard Woolley and supported by Professor Ralph E. Turner, there may have been 'idea diffusion', a concept developed by the anthropologist A. L. Kroeber, 'Stimulus Diffusion', *American Anthropology*, Vol. 42 (1940), pp. 1–20.

21. Scholars are not agreed as to whether Menes is an actual historical figure or whether he is a later legendary composition. See John A. Wilson, *The Burden of Egypt* (Chicago, 1951), pp. 43–4; E. Drioton, J. Vandier, *Les Peuples de l'Orient Méditerranéen*, II, *l'Egypte*, (3rd ed., Paris, 1952), pp. 160–2; W. Helck, *Zeitschrift der deutschen Morgenländischen Gesellschaft*, 103 (1953), pp. 354–9.

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22. Some authorities set the summit of Egyptian civilization back into the Old Kingdom. See John A. Wilson, *The Burden of Egypt* (Chicago, 1951), and E. Otto, *Aegypten: Der Weg des Pharaonenreiches* (2nd ed., Stuttgart, 1955).

23. It is permissible to raise questions, as does Professor John A. Wilson, as to the true nature of the political aims in Asia of the rulers of the Middle Empire. The military expeditions into Nubia, and the establishment of powerful fortresses, will, of course, be contrasted with the single campaign of Sesostris III against Sekmen. There is no doubt that the Egyptian contribution to Byblos was of considerable importance. The treasure of Tôd testifies to the existence of close relations between Egypt and Asia. Statues of Sesostris II and Amenemhet III have been found at Ras-Shamra. It appears, however, that Egyptian influence in Asia was primarily cultural and economic and that, strictly speaking, there was never any politico-military empire.

24. The opinion that the Hyksos were expelled after a rule of little more than a generation is based on the work of R. Weill, 'XIIème dynastie. Royauté de Haute-Egypte et Domination Hyksos dans le Nord', Institut Français d'Archéologie Orientale, *Bibliothèque d'Étude*, Vol. XXVI (1953). These conclusions, however, have by no means met with general acceptance. The prevailing opinion is that the intermediary period between the Middle and New Empires lasted from about 1730 to 1580 BC and the Hyksos domination from 1680 to 1580 BC. See, e.g., E. Drioton and J. Vandier, *Les Peuples de l'Orient Méditerranéen*, II, *L'Egypte* (3rd ed., Paris, 1952).

25. That the horse was introduced in the time of the Hyksos is generally assumed [see the bibliography in *Syria*, XXXVII (1960), pp. 17–18]. We have no record of horses in Egypt prior to the Hyksos invasion; but Ahmose I, at the siege of Avaris, used a chariot. Since a senior officer, Ahmose, son of Ebana (from whose tomb at El Kab we get our information) fought on foot, it looks as if the horse was still a great rarity.

26. Professor J. Leclant emphasizes that in addition to its strictly technical and military effects, the introduction into Egypt of the horse and chariot had considerable political and social consequences. The importance of the officers, particularly of chariot officers, was constantly on the increase. New guilds arose—cartwrights, saddlers, metal-workers. Even aesthetics took on a new aspect, Egyptian art showing henceforward not only new motifs but also new forms of expression: the speed, movement, variety and elegance of line, together with the vivacity of the great compositions becoming the hallmarks of the art of the New Empire.

27. There exist no known texts concerning any campaign by Amenophis I in Asia. All that is known is that in the year II of the reign of Thutmose I, the empire extended from Tombos (in the Sudan) to the Euphrates: cf. the Tombos stele I. 13–14; this inscription refers to the Euphrates as 'the water which runs backwards [i.e. in the opposite direction to that of the Nile] and which descends towards the South'.

28. It is impossible to determine with absolute certainty the chronology of the New Empire. There persists a margin of error of some ten years (see in particular M. B. Rowton, *Iraq*, VIII (1946), pp. 94–110, and *Journal of Egyptian Archaeology*, 34 (1948), pp. 57–74. The date most commonly assigned to the beginning of the reign of Thutmose is 1504 BC, and that for the death of Hatshepsut 1482 BC. On the controversial and difficult question of the reigns of Thutmose III and Hatshepsut, see W. E. Edgerton, 'The Thutmosid Succession', Oriental Institute of Chicago, *Studies in Ancient Oriental Civilization*, No. 8 (1933).

29. Egypt, an African land, an oasis created by an African river on the border of the great Sahara desert, as Professor J. Leclant points out, offers an opportunity of throwing some light on the earliest history of the African continent, still so obscure. We should, at all events, keep in mind the substratum common to the culture of Africa and to that of the Egypt of the Pharaohs. [See the work of H. Frankfort, in particular 'The African Foundation of Ancient Egyptian Civilization', Congresso Internazionale di preistoria posthistoria e mediterranea, *Atti* (Florence, Naples, Rome, 1950), pp. 115–16; and *The Birth of Civilization in the Near East* (3rd ed., 1954), pp. 42–3.] In order to understand the history of Egyptian civilization it is, in any case, essential to take into account the main lines of

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the history of the Sudan, the land of Kush, a convenient summary of which is to be found in A. J. Arkell, *A History of the Sudan to A.D. 1821* (London, 1955).

30. Professor I. M. Diakonoff refuses to recognize the existence of a nationalist sentiment as early as 3000 BC. In his opinion, nations as such did not exist. The Sumerians did not even have a common name; 'the black-headed' was a term used of the Sumerians as well as of the Akkadians; people were called by the name of the city to which they belonged. Sir Leonard Woolley, however, considers that 'nationalism' is the only expression that corresponds to what we know of the facts; it was perhaps hardly conscious except in so far as all the people thought and felt alike, in face of foreigners.

31. The final chronology of the early period of Mesopotamian history is still subject to further examination and possible revision. The tendency in recent years has been to advance to a considerable extent the dates previously accepted. See the works of S. Smith, W. F. Albright, A. Goetze and of Sir Leonard Woolley.

32. It might perhaps be preferable to speak of a slackening in the rhythm of progress rather than of actual stagnation. Professor Diakonoff suggests that this is due to the establishment of despotism. Commentators on behalf of the National Commission of Israel are opposed to the establishment of a relationship of cause and effect between cultural lag and the preponderance established by the Semitic element.

33. Professor I. M. Diakonoff refuses to consider the history of southern Mesopotamia in the third millennium as a social conflict between the Semites and the Sumerians. The position adopted by Sir Leonard Woolley was based on the study of the tablets of Ur. See also Th. Jacobsen, 'The Assumed Conflict between Sumerians and Semites in Early Mesopotamian History', American Oriental Society, *Journal*, LIX (1939), pp. 485–95.

34. Professor I. M. Diakonoff considers it misleading to call ancient moneylenders 'bankers', a term denoting an institution of much later date.

35. Both Professor I. M. Diakonoff and Professor Alf Sommerfelt draw attention to doubts recently cast on the validity of including the Kassites among the Indo-European races; see Kemal Balkan, 'Kassitenstudien I, Die Sprache der Kassiten'. German translation by F. R. Kraus, *American Oriental Series*, Vol. 37 (New Haven, 1954). It is possible that the Kassite rulers were Indo-Europeans, but certainly not the majority of the Kassite people; see S. A. Pallis, *The Antiquity of Iraq* (Copenhagen, 1956), p. 615. Professor Diakonoff doubts that even the rulers of the Kassites were Indo-Europeans. Their names were certainly not Indo-European.

36. Tahsin Özgüc, 'The Dagger of Anitta', *Belleten*, XX (January 1956), p. 77.

37. Some Indian scholars have advocated a theory on the indigenous origin of the Aryans; see R. C. Majumdar, ed. *The History and Culture of the Indian People*, I, *The Vedic Age* (London, 1951), pp. 215–17. The National Commissions of India and Pakistan, as well as Professor I. M. Diakonoff and Professor G. F. Ilyin, draw attention to the fact that there is more than one theory regarding the fall of the Harappā civilization. R. E. M. Wheeler, 'Harappā, 1946: the Defenses and the Cemetery R.37', *Ancient India*, No. 3 (1947), pp. 81–3, supports the point of view given above, as does Stuart Piggott, *Prehistoric India* (London, 1950), p. 244. M. R. Sahni, *Man in Evolution* (Calcutta, 1952), pp. 153–4, holds that floods were responsible for the destruction, while A. Ghosh, 'The Rajputana Desert: Its Archaeological Aspect', National Institute of Sciences of India, *Bulletin*, No. 1 (1952), pp. 37–42, discovered a gap between the end of the Indus Valley civilization and the incoming of the 'Painted Grey Ware People'. For a good summary cf. B. B. Lal, 'Proto-historic Investigation', *Ancient India*, No. 9 (1953), pp. 80–102.

Sir Leonard Woolley, however, considers that these different theories are not of equal value. That of a flood being responsible for the destruction of the great Indus valley cities is inconsistent with the fact that citizens were killed in the streets. The overthrow of the cities would result in the neglect of the canal banks and therefore in the flooding of the sites *after* the war.

According to Sir Leonard, a gap between the fall of Harappā civilization and the settlement (not the incoming) of the 'Painted Grey Ware People' would be inconclusive

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as an argument for or against the view that they were responsible for the destruction of that civilization; if they were the Aryans, they were still in the pre-urban stage and would take time to settle down. The fact of the gap is still non-proven. Rupar, in the Punjab, showed two levels, (*a*) Harappā, and (*b*) Painted Grey Ware, with no overlap but a distinct break between them. Hastinapura showed three levels, (*a*) crude ochre-coloured pottery, (*b*) Painted Grey Ware, (*c*) (after a break caused by a flood) Northern Black Polished Ware, with iron; Harappā was not represented here. A. Ghosh, in his summary of the Hastinapura excavations (*Ancient India*, No. 10, 1954) points out that the Painted Grey Ware is widespread in north-west India in the first half of the first millennium BC with a possible extension into the last part of the second millennium; Lal's date for the ware at Hastinapura is *c.* 1100–800 BC. Ghosh says 'this ware is probably a relic of the Aryan-speaking people, or a branch thereof; its distribution corresponds with the holy land of Aryan literature, and the date agrees, for if the conventional date for the entry of the Aryans into India, viz. 1500 BC, be accepted (and evidence about their movements in the Near East does not contradict this date), they would have reached the Gangetic plain a few centuries later'. Lal agrees that the ware represents the Aryans, though he admits that not all Indian archaeologists share that opinion. Ghosh concludes that 'it is doubly premature to say that the Aryans had nothing to do with the disappearance of the Harappans'.

38. cf. Author's note at the end of chapter, pp. 405–7.

39. As Professor J. Maluquer de Motes observes, the ideas of mining and metallurgy reaching the Iberian Peninsula by the end of the third millennium may very possibly be traced to Cyprus.

40. Sir Arthur Evans, *Palace of Minos*, III, p. 477, has spoken of Resheph in connection with statuettes found at Knossos and Tiryns portraying a figure in 'a valiant posture'. It does not, however, appear that these necessarily represent a god and there is, in any case, no evidence to justify the assumption that they represent Resheph in particular.

41. Sometimes read 'Khapiri'. See J. Bottero, 'Le problème des Habiru à la 4ème Rencontre Assyriologique Internationale', Société Asiatique, *Cahiers*, XII (Paris, 1954).

42. There are divergent views regarding the origin of the Etruscans. Sir Leonard Woolley accepts the traditional account of their immigration from Anatolia after the fall of Troy, for which important support, if not complete confirmation, comes from recent studies of Etruscan tomb objects [e.g. 'Urartian Bronzes in Etruscan Tombs', by K. R. Marxwell-Hyslop in *Iraq*, XVIII, 2 (1956), p. 150], and of physical anthropology [e.g. 'Sur les origines des Etrusques', by Sir Gavin de Beer in *Revue des Arts*, No. 3 (1955)]. The admitted difficulty of the time gap between the twelfth century and the first appearance of the Etruscans in Italy is in course of solution as the dates assigned to the tombs are shown to have been unduly late. See also *History of Mankind: Cultural and Scientific Development*, Vol. II, by Luigi Pareti, with the assistance of Paolo Brezzi and Luciano Petech.

43. According to Professor G. F. Ilyin, one cannot, on the basis of the Australoid skulls, found among others in Mohenjo-daro, infer that the old native population constituted the lower classes.

44. The Bamboo Books reduce these dates by as much as two centuries, i.e. to 1989, 1558 and 1050 BC (or even 1027 BC). Some modern scholars adopt this shorter chronology, but in the present text the author has adhered to the 'orthodox' chronology. Professor L. S. Vasilyev recommends reference to W. M. Hawley, *Chinese Chronology* (Los Angeles, 1953) and to Cheng Mengchia, *On the Question of the Chronology of the Chang-Yin and Hsia-Chou* (Shanghai, 1955).

45. See H. G. Creel, *Studies in Early Chinese Culture* (London, 1938), pp. 120, 130 sq.

46. See Li Chi, *The Beginnings of Chinese Civilization* (Seattle, 1957), p. 29.

47. See, for instance, Chêng Tê-k'ung. 'The Origin and Development of Shang Culture', in *Asia Major*, New Series, Vol. VI, Pt. 1 (1957), pp. 80–98.

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48. Professor I. M. Diakonoff stresses the hypothetical character of this point of view. He considers that similar conditions—in this case urban civilization—create similar needs and stimulate similar inventions. The invention of an identical technique may take place in two different places. Professor Diakonoff and Professor L. S. Vasilyev call attention to the fact that the tribes living on the vast expanse of the plains and in the mountains stretching between Mesopotamia and China were all illiterate.

49. Professor J. M. Casal feels that this dating may be too high: 'As I have pointed out [*Illustrated London News* (May 7, 1955), p. 832] these late levels seem to go back to the first half of the first millennium BC and this dating still holds. As for the "great building in mud-bricks with a façade of half-columns" referred to a few lines farther down, attributed to the latter part of the third millennium, more extensive excavations carried out up to 1958, and a better knowledge of finds coeval with it, have convinced me that this monument, now identified as a Palace, should be contemporary with the Early Dynastic of Mesopotamia, which still better fits with Sir Leonard Woolley's conclusions.' See J. M. Casal, Délégation archéologique française en Afghanistan, *Mémoires*, XVII (Paris, 1961).

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CHAPTER II

# THE URBANIZATION OF SOCIETY

It is an axiom of economic history that real civilization can begin only in regions where the character of soil and climate makes surplus production possible and easy; only so is man relieved from the necessity of devoting all his energies and all his thought to the problem of mere survival, and only so is he enabled to procure from others by means of barter those things which minister to well-being and promote advance but are not naturally available in his own land; moreover, such conditions must prevail over an area large enough to maintain not merely a small group of individuals but a population sufficiently numerous to encourage occupational specialization and social development. So does civilization begin. Most of the community continue to devote their energies to actual food-production, but men whose gifts or tastes are of another sort become artisans, specialists in production of a different but scarcely less necessary kind, making those things without which the agricultural worker cannot get on. Increasing wealth and the uneven growth of private property lead to the development of technical knowledge, of art and of government, and the respected elders of the old days, now free to devote themselves to the ever more complicated task of government, evolve an apparatus of law which is calculated to maintain order within the community and to defend it from outside aggression. The higher progress is the direct outcome of acquired skills and techniques, but those skills and techniques can be developed only where natural conditions make possible the surplus production of foodstuffs.

In two countries of the Middle East, in Mesopotamia and Egypt, these conditions were amply fulfilled and in those two countries Middle Eastern civilization accordingly began. Great emphasis has been laid by many writers on the fact that in them, as in none of the neighbouring lands, nature supplied precisely what was requisite for progress; in both there is a long valley of vast extent filled with water-borne silt which as agricultural soil is of amazing richness; in both a great river running through the centre of the flat plain brings the water that is essential in a sun-scorched land, floods it and leaves behind a silt that further enriches the soil, and can be tapped by canals to secure fertility throughout the year. So described, Mesopotamia and Egypt would appear to be exactly parallel in the opportunities that they afforded to early man, and therefore one might have expected early man in the two countries to develop along parallel lines, especially when, as we have seen, the two were in contact and Mesopotamia exercised a considerable influence upon the beginnings of Egyptian civilization. But in point of fact the two peoples

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progressed along lines wholly divergent. Nothing could be more unlike the mosaic of city states that divided between them the valley of the Euphrates and the Tigris than the unified kingdom of Egypt in which the city was really non-existent. The whole basis of society is radically different in the two countries, and the historian cannot ascribe this to 'the different mentality' of the two peoples because we know nothing of their respective mentalities so far as they had been formed at the outset of our period; and when later on they had been formed and we can fairly contrast them, they must be considered as the results just as much as, if not more than, the possible cause of the opposing conditions of life. The course of history can only be properly understood when it is realized that the similarity in the physical conditions of Egypt and Mesopotamia is only partial; actually the two valleys differ fundamentally, and in such a way as to impose upon their inhabitants quite different modes of life, and widely divergent religious views.

## EGYPT

The valley of the Nile, lying between hills of sandstone and limestone, is in profile slightly concave and slopes towards the sea with an average fall of 1:13,000. The annual flood, depositing the heavier silt close to the stream's course, raises the banks a little above the level of the bottom of the hollow through which the river runs, and at normal times the surface of the water is well below that of the ground on either side, the channel being deeply cut and the amount of sediment deposited on the river bed being negligible. At flood time the river rises slowly, spreading over the valley, or at least over the lower part of it, and falls slowly, draining away, thanks to the ground contours, and leaving behind it no stagnant water but a fairly uniform deposit of silt (clay with up to 20 per cent of sand) which is free of salt and an excellent fertilizer; and again, because of the gentle rise and fall and because of the ground's slope, which ensures the draining-away of the flood water, the sediment does very little in the way of silting up canals. But the most important feature of the Nile is that its flood in the first place is remarkably regular, so that its coming is predictable and—since it is gradual—can be observed in the river's upper courses in good time to give exact warning to the inhabitants of the valley downstream; and in the second place it occurs in the autumn, lasting from about August 15th into early October. This means that the flood comes long after the harvest has been gathered and, when the ground is parched and hard, irrigates it, covers it with fresh sediment and withdraws as winter sets in and gives the signal for sowing; the soil holds enough moisture for the winter-sown crops to come to maturity, and for later sowings a very simple system of short canals tapping the stream higher up will assure a summer harvest.

All that the earliest settlers had to do was to sow their seed along the riverside as soon as the flood waters receded and wait for the crop to grow and

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ripen; by such a simple means a single isolated homestead would obtain more than enough foodstuff to support itself. As the population increased, the relatively small area of naturally irrigated soil would no longer suffice and had to be expanded artificially; but to do so was an easy task. The primitive farmer had made the obvious discovery that the effects of the flood could be supplemented if necessary by cutting through the natural dyke of the river's bank a channel that would lead fresh water on to the growing crop, and when the ground had been thoroughly saturated the gap could be closed and the surplus water drained off by cutting the bank lower downstream. On this simple process was based the whole economy of after times, i.e. the basin irrigation of the Nile valley. The principle is that the land along the river is divided into compartments—basins—by embankments thrown up at right-angles to the river's course; a canal started from upstream conducts water from the river to the basin, where smaller canals and ditches spread it evenly over the compartment; another canal drains the excess water off to a second basin or to the river downstream. Basin irrigation can produce only one crop in the year because when the river sinks below a certain level the lead-off canals dry up; but with the rich soil of Egypt one crop is sufficient, and the system has the advantages of short canals, simple upkeep and very slow silting-up of the channels. This means that every village was economically independent in that the labour necessary for the surplus production of food was well within the scope of a small social unit, left indeed a fair amount of leisure and allowed for the specialization of handicrafts. Obviously there was an interest in having some kind of market where the produce of different villages could be exchanged, and this would lead to the growth of market towns, the existence of which would imply a certain amount of local administration; but with that the requirements of the village would be satisfied. Egypt in the pre-Dynastic period must be envisaged as a land of village communities each primarily concerned with the cultivation of its own fields by its own efforts; it is possible and indeed likely that the existence of particularly holy centres of worship acted to some extent as a centralizing influence and served to divide the country into major groupings, but these 'nomes', though they might supply a rallying point and leadership in times of crisis, had not, so far as we know, developed into administrative capitals. It is safe to say that there were no pre-Dynastic cities. With the unification of Egypt the king was at pains to regularize the happy-go-lucky irrigation system of the old days; Nilometers were built and observers attached to them to give due warning of the coming of the annual flood; the king himself performed the ceremony of cutting the dykes, as is shown on the mace-head of Khasekhamui (Pl. 15); a land-registry office in the interests of government taxation measured and counted the fields whose boundaries might have been obliterated by the mud of the inundation; forced labour was imposed on the peasants to dig canals on a more ambitious scale so as to bring into bearing the higher land beyond the reach of the flood waters. But though the once free farmer

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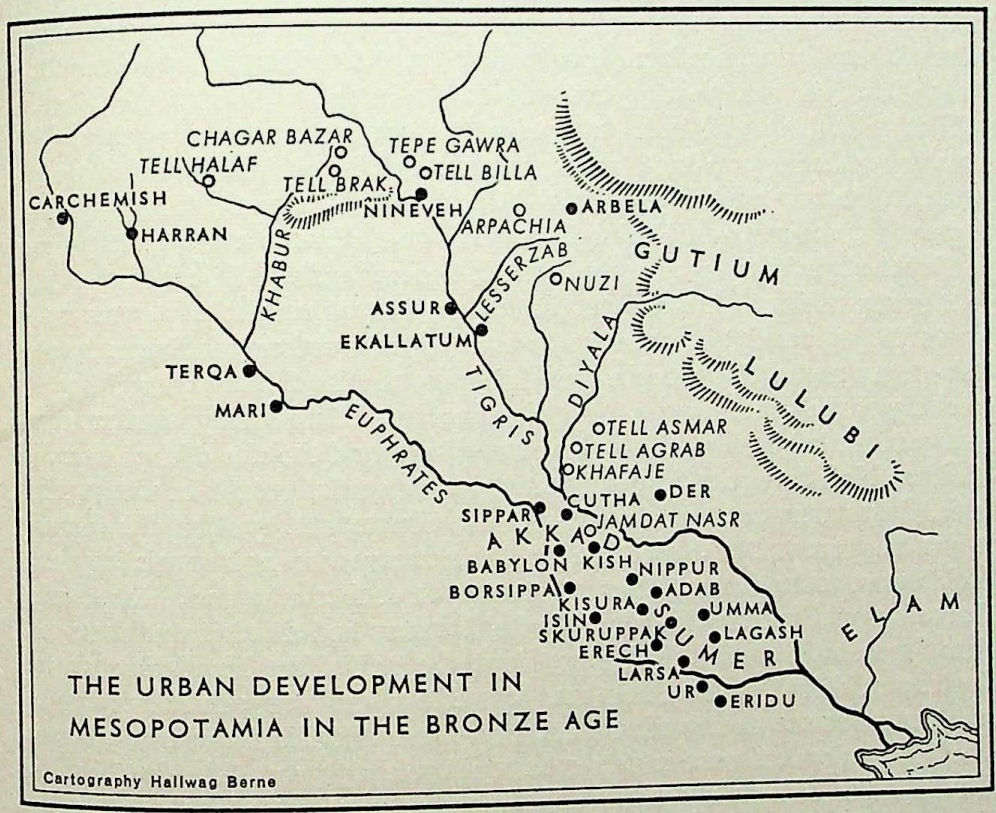
was now the drilled and regimented serf of the divine Pharaoh, his basic manner of life was but little changed and for him at least social conditions remained the same; Egypt was still an agricultural country of villages and market towns wherein, apart from the temporary capital arbitrarily set up by the dynasty of the time, there were no cities overshadowing the countryside.

## MESOPOTAMIA

To Egypt Mesopotamia affords a striking contrast (Map XIII). Between hills of marl containing salt and gypsum lies a wide plain which in cross-section is




MAP XIII

absolutely flat and has a seaward slope (1 : 26,000) only half that of the Nile valley. Of the two rivers which run through the length of the plain the Tigris, on its eastern marge, is of relatively little use for irrigation because it has a deeply-cut bed and the normal level of its waters lies too low beneath that of the surrounding country for the stream to be tapped by any simple system of canalization. The Euphrates it is that makes agriculture possible in a land where the rainfall is as scanty as in Egypt and the climate even less equable, with greater extremes both of heat and of cold.

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From its source in the Anatolian mountains down to the rocky barrier below Hit the Euphrates has a violent current (at Carchemish, for instance, it flows at a rate of five miles an hour), and in consequence its turbid waters carry about five times as great a content of sediment—loam mixed with a large proportion of lime—as does the Nile. When it enters the flat alluvium of the delta the current is naturally slowed up and much of the sediment is dropped on to the bed of the river and especially along its edges where the main force of current is less; the bed is raised thereby and high banks are formed on either side, and in time the whole river runs above the level of the plain.[1] Clearly this high-running water can be tapped for the benefit of the fields alongside, and clearly also the natural banks of the river must be maintained and strengthened if those fields are not to be submerged at the wrong time. To cut the bank is only too easy, and the Euphrates' water, like that of the Nile, will not only irrigate but with its silt will enrich the soil; the difficulty in this flat plain is rather to get rid of the superfluous water, which is prone to lie in pools and stagnant swamps and, if it be merely dried out by the sun, impregnate the earth with salts and alkaline compounds which in time will make it barren. Drainage in Mesopotamia is as essential as irrigation.

But the chief difference between the Euphrates and the Nile is in the date of the annual floods. No one can foretell precisely when the Euphrates flood is to be expected, because that depends upon weather conditions in the far-distant mountainous regions of Anatolia, the flood being caused by the melting of the winter snows there. It comes in the late spring, at some time between the beginning of April and early June, and the rise of the waters is sudden. Now from the farmers' point of view no time could be worse than this. Crops must be sown according to the climate, and by April the winter-sown crops are well advanced and the summer crops are in; if at this stage the fields were to be drowned beneath two or three feet of water all hope of a harvest would vanish, and after the flood waters had dried it would be too late for a fresh sowing. In Egypt, Hapi, the god of the inundation, was a beneficent deity by whose help man was able to eat bread; in Mesopotamia the flood was the enemy of man and Nin-Girsu and Tiamat who ruled over the chaos of waters were to that extent malevolent powers. The flood had to be fought, to be kept in check at all costs; some of its waters might indeed be led off to fill the reservoirs or natural depressions on the edge of the higher desert, but the fertility of the country—and it was wonderfully fertile—depended on the river's normal flow when it could be profitably tapped by irrigation canals, and was only endangered by its rise.

The Mesopotamian agriculturalist was compelled by nature to adopt the system of perennial irrigation. Because the river bed was high above the cultivated plain, water could be brought to the latter all through the dry season and he could therefore count on having two harvests in the year ripened by the torrid sun. But against this tremendous advantage was set the colossal amount of labour involved. Because the river ran at a high level, the canals

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leading from it had also to be high, so as to obviate a too-sudden rush of water, seeing that such would tend to destroy the canals, built as they were of fine light silt (sometimes it was thought worth while to strengthen the canal banks with layers of reed matting, as was more often done in the case of the river banks); and since distances had to be great and the wastage of water was considerable, size was an important consideration, and the main canals therefore might be as much as 25 yards in width, navigable channels making inland voyages possible and so facilitating transport as well as irrigating the soil. From the main channels smaller canals and ditches distributed the water; but again there had to be drainage canals which served the further purpose of cleaning the soil by washing out the superfluity of salt deposited with the silt.

All this meant not only a vast amount of manual labour but also an elaborate organization. It was not a case of a peasant watering his own smallholding; individual work of that sort was possible only in the immediate vicinity of the river and would have limited agriculture to a narrow strip of soil doomed to be destroyed by the flood. If any reasonable area was to be cultivated, water had to be carried far inland, and only communal labour could achieve the task. A network of subsidiary canals had to be planned which would ensure an equal distribution of water over the largest possible extent of arable land. Constant supervision was necessary to prevent one landowner exploiting the canal-borne water to the detriment of his neighbours. There had to be due authority for enforcing and directing labour (the *corvée*) to build the canals in the first place, to clean them when, as happened very quickly, they were choked with silt, and, above all, to prevent the breaching of the Euphrates' banks in flood-time. The Mesopotamian delta held out to early man the promise of a better and a richer life than could be found in any neighbouring land, but it was a conditional promise; its fulfilment required a co-operative effort and a centralization of control quite beyond the scope of a village community. The very nature of the country and of the river forced the inhabitants to make common cause throughout a territory whose size was decided by the limits of an interdependent canalization system, and the planning and upkeep of the canals required the direction of a regional authority enjoying absolute powers. By the mere logic of circumstances the Euphrates delta was from the outset parcelled out into a number of agricultural-irrigational units each having its own centre of administration, and the development of the city state was due not to the peculiar mentality of the Sumerian people but to the physical character of Sumer.

The surplus production of foodstuffs leads almost inevitably to occupational distinctions, the non-agriculturalist following his natural bent in manufacturing something that is in general demand and exchanging his handiwork for the food produced by others, and this specialization leads to distinctions of class. In the most primitive communities we are likely to find an 'intellectual' minority enjoying a more or less privileged ascendancy over

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the 'labouring' classes, and as the 'professions' become more sharply differentiated from each other and from the workers on the soil there must result a social organism in which functions are regularized and there is an admitted system of government.[2] But while such development is essential to the urbanization of a society, it is not the sole condition; by itself it does not necessarily lead to the growth of cities or the birth of the civic spirit. In Egypt class distinctions were at least as sharply defined as they were in Mesopotamia, but in the manner and degree of urbanization the contrast between the two countries is profound.

## SUMER

The Elamitic farmers who, as immigrants into the drying delta of the Euphrates, introduced there the al'Ubaid culture, brought with them a common religion. But each family or clan seems to have selected from the general pantheon one particular god or goddess to be its patron deity. As in ever greater degree the conditions of agricultural life in the valley enforced co-operation and centralization within each irrigation unit, there developed a non-labouring intellectual class to assume the direction of the communized body; something in the nature of an official hierarchy took shape, and the particular deity under whose protection the leaders of the community rose to power became *ex officio* the god of the community. The Sumerian mythology makes this perfectly clear when it says that the supreme council of the gods parcelled out the land into states each of which was assigned to one of the gods as his kingdom, and these in turn selected each a mortal ruler to be his representative; although this might seem to reverse the actual order of things yet it does in fact emphasize the underlying truth that different gods accompanied the groups of immigrants and that the area chosen for the settlement of each was the seat of its god's rule. The fact that all the gods belonged to a pantheon recognized by all the settlers alike guaranteed a uniformity which entitles us to treat of Sumer, from the cultural point of view, as a whole. On the other hand, the fact that individual gods of the pantheon were the divinely appointed owners of their territories guaranteed the autonomy of the Sumerian city states. A god might temporarily be reduced by the armies of a neighbouring god to a condition of vassalage, but he could not be deprived of his kingdom; for his own subjects he was still the city's lord.

If then the rise of the Sumerian city states was the logical outcome of economic conditions, their identity was perpetuated by the sanction of religion. As they all shared common traditions and conformed to one general pattern the establishment by an ambitious and warlike ruler of a dynasty claiming suzerainty over all alike did not seriously affect their individuality; such conquest involved no cultural change, and nothing would dispossess the local god of his authority, neither did enforced submission call for any wider loyalty. From first to last the Sumerian was essentially a citizen; he was not a

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Sumerian national but a citizen of this or that capital city, owing allegiance only to the city's divine lord and, in due measure, to his human representative; his entire way of life and his outlook were dictated by the conditions of a city state.

A Sumerian city state might include various townships, but these, however important in their own eyes, were politically but the satellites of the capital city. Thus Eridu, which claimed to be the earliest Sumerian foundation and, as the centre of the cult of Ea, enjoyed peculiar sanctity, formed part of the domains of Ur and had no separate political existence; indeed, if we may judge from its remains, it survived only as a religious institution. The political and economic administration of the state was centred in the capital.

It is only against the background of the city itself that the culture and character of the citizens can be understood. While the later chapters of this history will have much to say regarding the religion that formed the basis of Sumerian citizenship, the type of government and the system of law under which the Sumerian lived and the professions and industries that he followed, his material surroundings must also be taken into consideration.

The most detailed and accurate picture of a great Sumerian city is given by the ruins of Ur. As a capital city, at one time the headquarters of a dynasty, Ur answers our purpose better than would a provincial town such as Esh-nunna; excavations there have been on a larger scale than elsewhere and so give more material for judgement. The Isin-Larsa period (*c.* 1700 BC), to which belong the remains most consistently preserved, still kept the tradition of the Third Dynasty of Ur and was a time of great prosperity though no longer of imperial power; and work upon other sites makes it clear that Ur was in all essentials typical of the Sumerian state capitals from the Persian Gulf right up to Mari on the middle Euphrates.

Ur consisted of three parts, the Temenos or Sacred Area, the old walled city, and the outer town.

The walled city (Fig. 60) stood on the mound formed by the ruins of successive buildings set up on the site of the original settlement of al'Ubaid days; along its western wall ran the river Euphrates, along its eastern wall a broad navigable canal which led off from the Euphrates just above the city, so that this in fact occupied the northern tip of a land promontory, and at its extreme northern end, inside the line of its walls, there was a harbour serving both canal and river; it is possible that in the time of the Third Dynasty of Ur a smaller canal ran right through the city from the harbour and turned westwards to rejoin the Euphrates. The city was in shape an irregular oval, with a maximum length of approximately three-quarters of a mile and a width of half a mile; it was surrounded by a huge rampart of mud-brick some 25 feet high, with a steeply sloping outer face, and along the top of this *glacis* King Ur-Nammu of the Third Dynasty built in burnt brick a great wall of defence 'like a mountain'; that wall had been razed when the Elamites destroyed the city and, in the eighteenth century, had been replaced by a continuous line



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of temples and private houses whose blank outer walls made a more normal bulwark.[3]

In the north-western quarter of the city was Temenos. The whole of this was really the palace complex of Nannar, the Moon god who was the owner of the city state. It was a rectangular enclosure which in Ur-Nammu's day (it

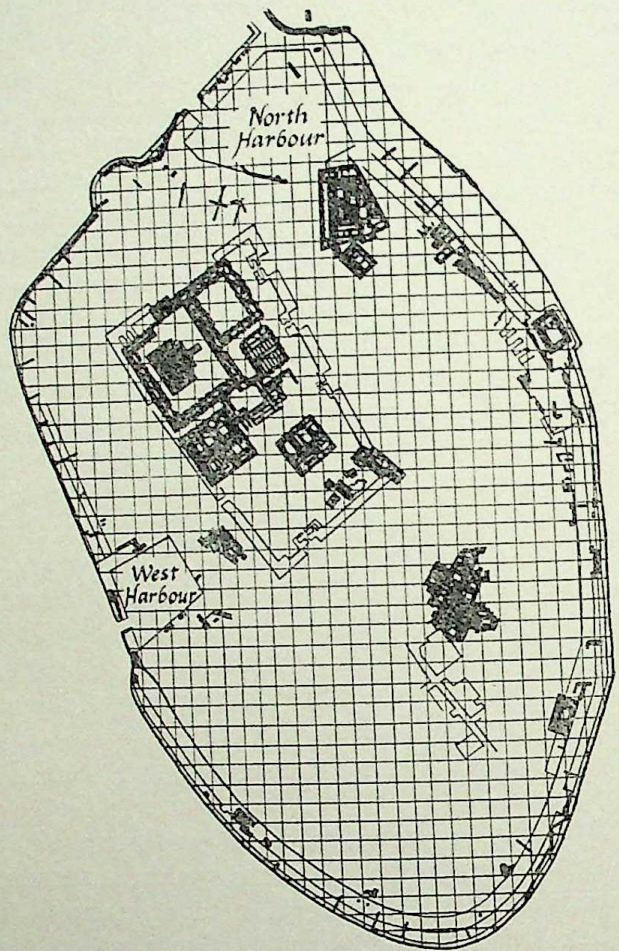


FIG. 60. Ur: the walled city.

was enlarged subsequently) measured about 270 yards by 190; it was raised as an artificial terrace above the general ground-level of the city and was girt with a massive wall of mud-brick; in its west corner, on a higher terrace also heavily walled, rose the Ziggurat, the huge staged tower, 68 feet high, capped by the shrine which was the holy of holies, the dwelling-place of Nannar himself. In front of the Ziggurat, at a lower level, stretched a great courtyard surrounded by storerooms and offices to which were brought the offerings for sacrifice and the rents due from the tenants who farmed the god's lands; the rest of the Temenos was entirely filled with temples—each

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furnished with its offices and magazines—dedicated to Nannar and his wife Nin-gal, to Nin-gal alone and, again, to Nannar as the supreme judge. This walled complex was the core of the city. Inasmuch as the state was a theocracy, the Sacred Area was the administrative centre, and its tax offices and court of law would directly influence the lives of the individual citizens, but much more important was its psychological effect. The Ziggurat, with its terraces planted with trees to give point to its name 'the Hill of Heaven', dominated the entire city, and 15 or 20 miles away across the dead level of the plain the farmer looking up from his work in field or garden would see that towering shrine which was the actual dwelling-place of the god his master. It was impossible not to be continually aware of the divine presence. It was true that the temples owned a vast proportion of the land and engaged in business of all sorts, and that the priesthood formed a large part of the personnel of government, and these and like material proofs of theocracy might at times seem oppressive, aimed at human aggrandizement rather than at religious service; but such impatience and such doubts could not stand against the assurance given by the Temenos sky-line, where the stepped-up roofs of temple and government office seemed to be but a pedestal designed to support the unique glory of Nannar's house;

God's in his heaven,
All's right with the world.

This is the sentiment that finds expression in the hymns and lamentations of the Sumerian poets, and nothing less will explain the fervent patriotism of the state's citizens.

The palaces of the earthly king, judging from what was true at Ur in the days of the Third Dynasty, lay outside the Temenos proper, on a somewhat lower platform built against the Temenos wall. When that dynasty came to an end the site, together with that of the royal tomb chapels, was soon usurped for private houses, because ground-space in the walled city was far too valuable for a large central area to be left unoccupied for long.

While the Temenos was strictly reserved for the service of the city's patron god, other deities of the pantheon had temples set up in their honour both in the walled city and in the outer town. These might be large and imposing buildings, but they lacked altogether the dignified seclusion of the Sacred Area; they were closely hemmed about by the houses of the townsmen. The congestion within the walls was indeed remarkable. If the residential quarters excavated at Ur give, as presumably they do, a fair sample of the city as a whole, we see something that has grown out of the conditions of the primitive village, not laid out on any system of town planning (Fig. 61). The unpaved streets are narrow and winding, sometimes mere blind alleys leading to houses hidden away in the middle of a great block of haphazard buildings; large houses and small are jumbled together, a few of them flat-roofed tenements one storey high, most of them of two storeys and a few, apparently,

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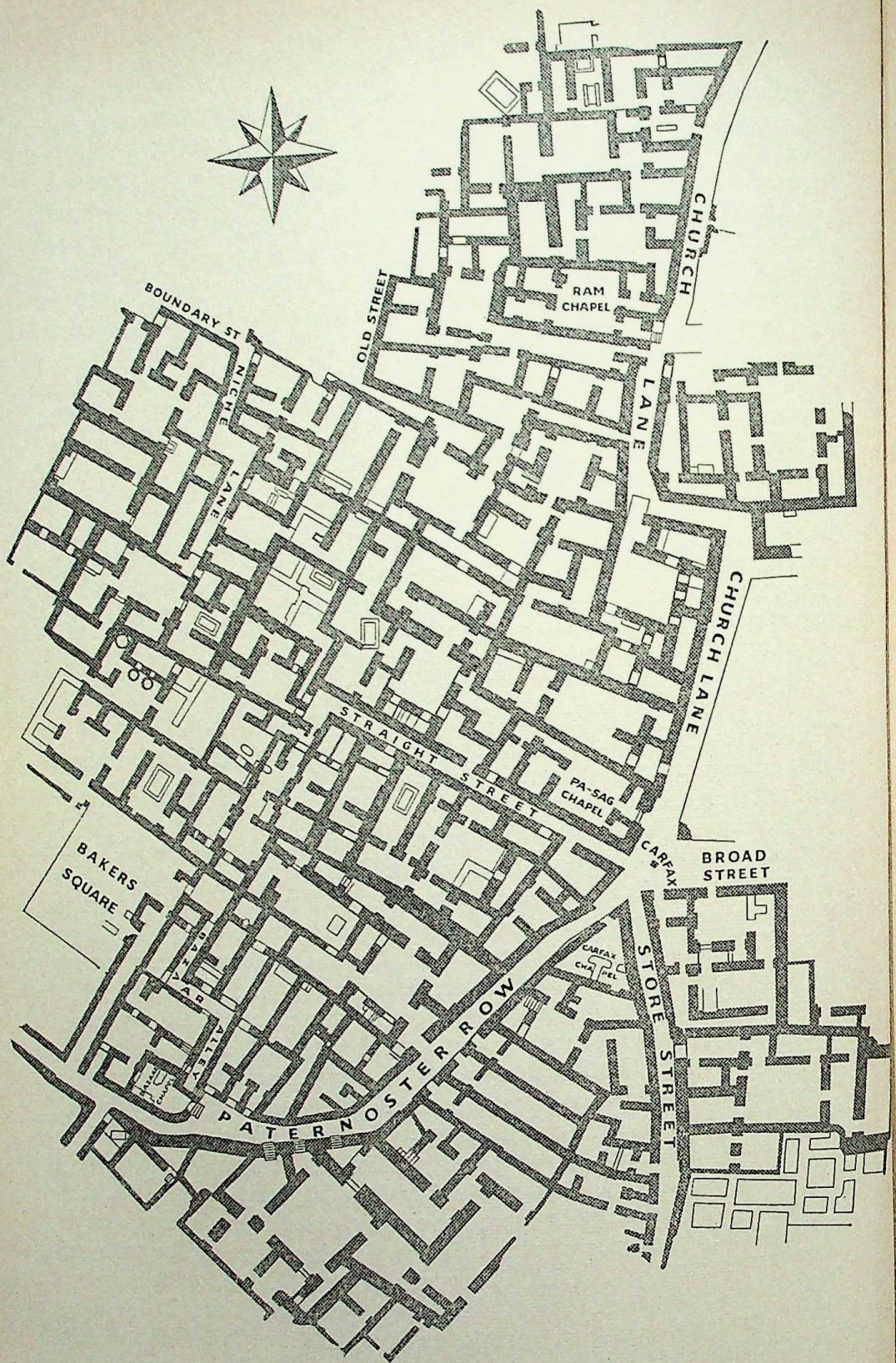


FIG. 61. Ur: plan of residential area.

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of three. Lanes sheltered by awnings and lined with open booths correspond to the bazaars of a modern Middle Eastern town. Wedged in between the houses there were little public chapels dedicated by pious citizens to the minor deities.

The houses themselves (Fig. 62), however much they might differ in size, were built to a plan which, though it might be modified to adapt it to the irregularities of the ground-plot, was in all essentials uniform. The façades were generally of burnt brick up to the height of the first-floor ceiling, and above that of mud-brick; for interior walls the proportion of burnt brick was optional, reduced sometimes to a mere damp-course, sometimes carried up to a height of five or six feet; doorways were most often topped with flat lintels but were occasionally arched. The basic plan was that of a house built round a central courtyard. The street door led into a small lobby through which one passed into the court. On to this opened the ground-floor rooms, the guest-room at the back of the court, the kitchen and service-room, the sleeping-room for the domestic staff with its low brick bed-platforms, and a work-room; one doorway contained the bottom flight of the stairs going to the upper floor, and under the return of the stairway was a lavatory. The stairs (their upper flight constructed of wood) gave on to a wooden balcony, supported by four uprights at the angles, which ran all round the court and gave access to the first-floor rooms, whose arrangement reproduced that of those on the ground floor; the house roof, sloping slightly inwards, projected from the walls sufficiently to shelter the balcony, and left in the middle a large opening that gave light and air to the house; gutters projecting from the roof shot rainwater into the centre of the court, where was a drain intake and a sump-pit. At the back of the house proper was the domestic chapel and burial-vault of which a description is given in Chapter VIII.

Houses like these, very much more sophisticated than the one-storeyed houses of a provincial town such as Eshnunna in the Sargonid period (Fig. 63) are quite obviously the result of a long process of urbanization in which the interests of the individual citizen were never unduly subordinated to the discipline of the state. If the ground-plan is more or less stereotyped that is not because the government dictated a norm but because this was the plan best adapted to the climatic conditions of the country and to the ideals of family life of the people—as is amply proved by the fact that an identical plan, even in its details, is followed by the better-class Arab houses of Baghdad and Basra at the present day. Documents found in the houses showed that they were the homes not of wealthy aristocrats but of people in the middle and lower middle classes, merchants, shopkeepers, tradesmen of all sorts, and occasionally a priest or scribe; clearly the material benefits of a fairly advanced civilization were shared by a far greater proportion of society in Sumer than was the case in Egypt. Undoubtedly there were slum quarters; to the north-west of the Temenos there were one-storey houses of a very shoddy type, but these may quite possibly have been for the slaves attached to the temple

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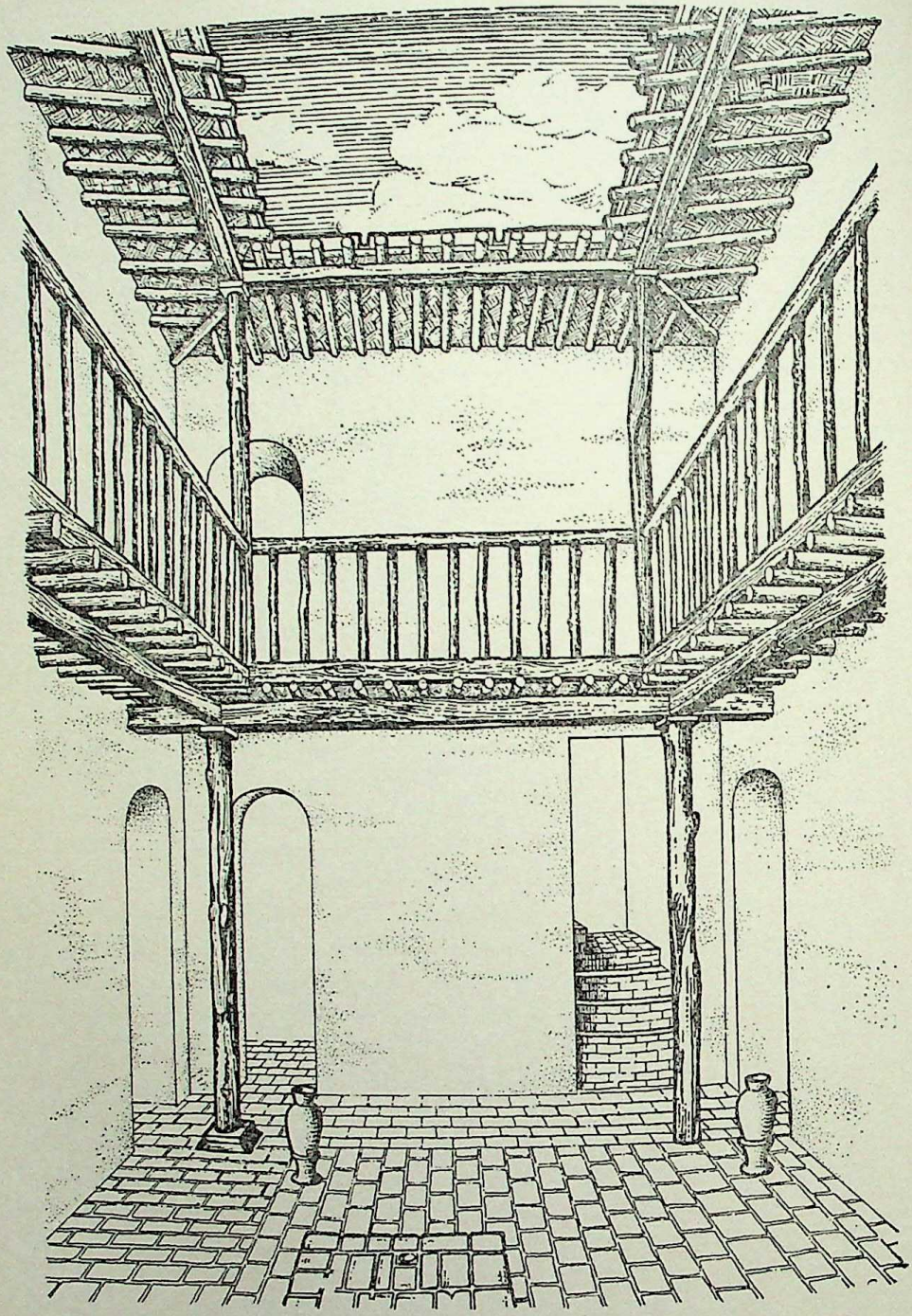

FIG. 62. Ur: reconstruction of a private house.

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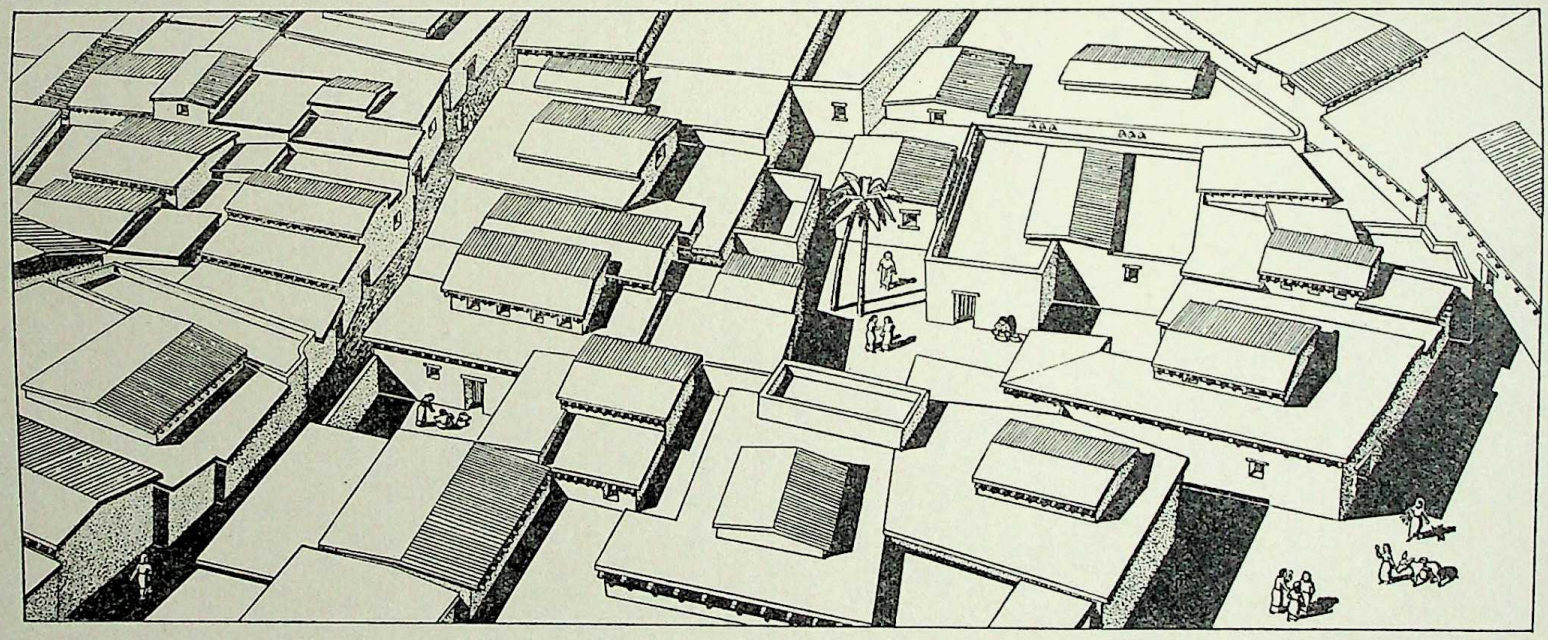

FIG. 63. Restoration of Eshnunna in the time of Sargon (after Frankfort).

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services; excavation in one area of the outer town seemed to show that there were there artisans' quarters where men practising the same trades lived together: but their houses were little if at all inferior to those of the walled city.

Regarding the population of Ur only a rough estimate is possible. The old cities of Aleppo and Damascus, at the beginning of the present century, counted about 160 persons to the acre; in both there were included large open spaces, and the great majority of the houses were of one storey only and often took up a liberal ground-space. Professor Frankfort found that at Khafaje, in the time of Sargon of Akkad, the one-storey houses (the rooms built round not an open court but a central room rising above the rest and lit by clerestory windows) averaged about 2,750 square feet in area and were about twenty per acre; allowing six to ten occupants for each house he arrived at a figure of 120 to 200 persons per acre and a total population of 12,000; a similar calculation gave him a population of only 9,000 for Eshnunna in the Isin-Larsa period. Both of these were small provincial towns.[4] When, in the ninth century BC, Assur-nasi-pal celebrated the completion of his new royal city of Calah by a banquet to all the residents, the number of guests (including officials and foreigners) was 69,574, of whom the residents proper would be no less than 65,000; although some women were invited (presumably those who had been employed on the palace building) we must add to this number the bulk of the women and all the children and the slaves in domestic service, which would, roughly speaking, more than double the number of the guests. The area of Calah is about 884 acres, which would give some 150 persons to the acre, a very close approximation to the figures for Aleppo and Damascus; but it is known that the walls of Calah included open spaces, gardens and farms and orchards; moreover, as an artificial and non-commercial city it could hardly be expected to have a very large population. The approximate area of the really built-up part of Ur, excluding wide stretches where there are signs of occupation but occupation of a scattered sort, is 1,450 acres, which on the analogies cited above would give a population of about a quarter of a million. On the other hand, open spaces at Ur seem to have been few; in the excavated parts of the residential area the density of houses works out at about 44 to the acre, two-storey houses predominating; and an allowance of six persons (including slaves and children) per house would give more than 250 to the acre, i.e. a total for the city of 360,000 souls.

Although Ur, like the other Sumerian cities, started as the administrative centre of an irrigated district, no purely agricultural economy could have led to the growth or maintained the existence of anything like the population which even our more modest estimate suggests. The farming of the rich delta plain was, of course, more important than ever when so many mouths had to be fed, and the ultimate dependence of the city upon its home-grown food was proved when, at a much later date, the river Euphrates changed its course, the whole elaborate system of irrigation was hopelessly dislocated and, in

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consequence, Ur was abandoned by its citizens. But in the prosperous days of the Third Dynasty, and in the Larsa period, industry and commerce played a bigger part than agriculture and occupied a greater number of people; the owners of the houses excavated at Ur may, some of them, have had a garden or an orchard out in the country, but they were business men first and foremost. Some of the capitals of Sumerian city states, less well situated than Ur for trade and manufacture, may have retained rather the character of the market town; but the Sumerian civilization was pre-eminently an urban civilization and, since commerce and industry were the concern of the ordinary citizen and called for individual enterprise, that civilization permeated society far more deeply than was the case in Egypt and assumed a democratic complexion of which the Nilotic civilization showed no trace at all.

## EGYPT

The city states of Sumer had no analogy in Egypt; nothing of the kind was ever known there. The nomes or administrative areas into which the country was divided in historic times undoubtedly had their origin in the pre-Dynastic period, when they were distinguished by standards which seem to imply that they were territorial divisions corresponding to the localized worship of different gods. The nature of the Nile valley and the type of irrigation used there did not lead to the formation of such economic units as explain the development of the Sumerian city state; it is more likely that the existence of temples possessing wide estates and the emergence of a limited number of wealthy landowners tended to give to different areas a certain measure of individuality; and it can safely be assumed that those areas, the nomes, were adopted, if not created from the first, for purposes of government administration. When Egypt was unified by Menes the delta was already 'the Northern Kingdom' and the conqueror took over from his rival the badge of the papyrus tuft and the Red Crown which were the symbols of Lower Egypt as a whole; he had in fact acquired not a congeries of small states but an organized kingdom of which the nomes were but the provinces. Naturally, he maintained the old system. He built a new capital, the White Wall, probably at Memphis, as the seat of the central government, but for the control of the provinces his officials had to be installed in provincial areas, and the market towns which each nome must have possessed would again serve the purpose. But this was not a step towards urbanization. The provincial governments were merely branches of the central government, and this very fact ruled out the possibility of any political and civic development. Even when the central power lost control, as when the collapse of the Sixth Dynasty involved the whole land in anarchy, the internecine wars were waged not by cities asserting their freedom but by ambitious monarchs and landed nobles seeking their private advantage.

Again, although the nucleus of each nome may have been a temple and the



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temple estates, religion did not operate in Egypt, as in Sumer, towards the creation of a local loyalty; the local god might and did own territory, but he was in no sense a king. Egypt's theocracy was of a totally different sort from that of Sumer; instead of the earthly ruler being but the chosen representative and the 'tenant farmer' of the sovereign deity, Pharaoh was himself a god, and his government was divine simply because it was Pharaoh's. The other gods did not and could not dispute his authority. To whatever deity of the Egyptian pantheon the local temple might be dedicated yet Pharaoh's statues adorned it and, as likely as not, the reliefs on its walls celebrated Pharaoh's exploits; the religious motive therefore tended to promote centralization rather than to assert local individuality or autonomy.

Egypt was one and indivisible. The government of the divine Pharaoh legislated for the country as a whole, indiscriminately and arbitrarily. The Egyptian, in consequence, as a creature of Pharaoh, was consciously an Egyptian—this comes out very clearly in, for instance, the story of Sinuhes—but he was never a citizen. The lack of any civic tradition is shown by the manner in which the capital was shifted from one place to another to suit the tastes or the habits of a new dynasty; but not even in the capital, for all its magnificence, was there any real civic life.

The Egyptian towns (Map XIV) were normally unwalled. Amenemhet III built a great wall round the old city of el Kab (it is still standing) but this seems to have been an innovation; it was possibly after the pattern of the Syrian cities that the Pharaoh thus singularly honoured what had been the capital of the southern kingdom before Menes united Egypt. Professor Flinders Petrie thought that he found remains of a town wall on the old site of Naqada, and on a pre-Dynastic vase there is painted the picture of a wall manned by soldiers—but this is as likely to be a fort as a town. Civil war was rare in Egypt, and armed invasion by foreigners was rarer still, so that the need for walled defences would be little felt—the walled city of Avaris was, of course, a Hyksos and not an Egyptian foundation. Generally speaking, the Egyptian town was open, and also small in size. It must be remembered that from first to last the Egyptian economy was based on agriculture. The vast bulk of the people lived and worked on the land. They required a market where they could barter their produce for what they could not themselves make; the town must have shopkeepers and craftsmen of the humbler sort, and there would be the government officials and the priests attached to the local temple; but there were no big industries and no large-scale commerce to swell the population or to give rise to a responsible middle class; there was nothing that called for the urban organization proper to a city.

Although based on entirely different economic principles, social conditions throughout the Egyptian countryside must have been very much the same in the second millennium BC as in the nineteenth century AD, with an essentially rural population content to stagnate in villages and small towns, the administration being entirely in the hands of functionaries appointed by and

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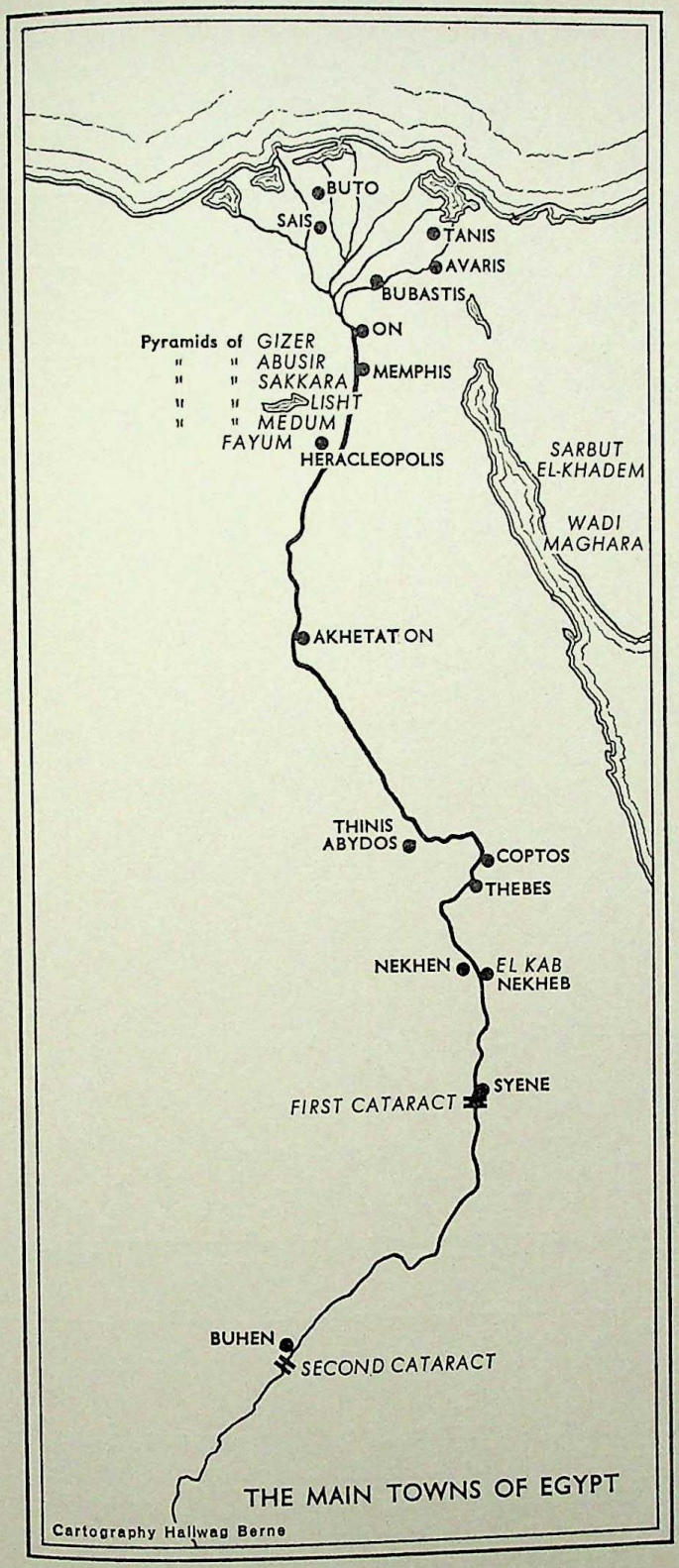


MAP XIV

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responsible only to the central government. But even in the capital, where were concentrated all the elements of Egyptian civilization, there seems to have been little in the way of a municipal organization to attract the loyalty

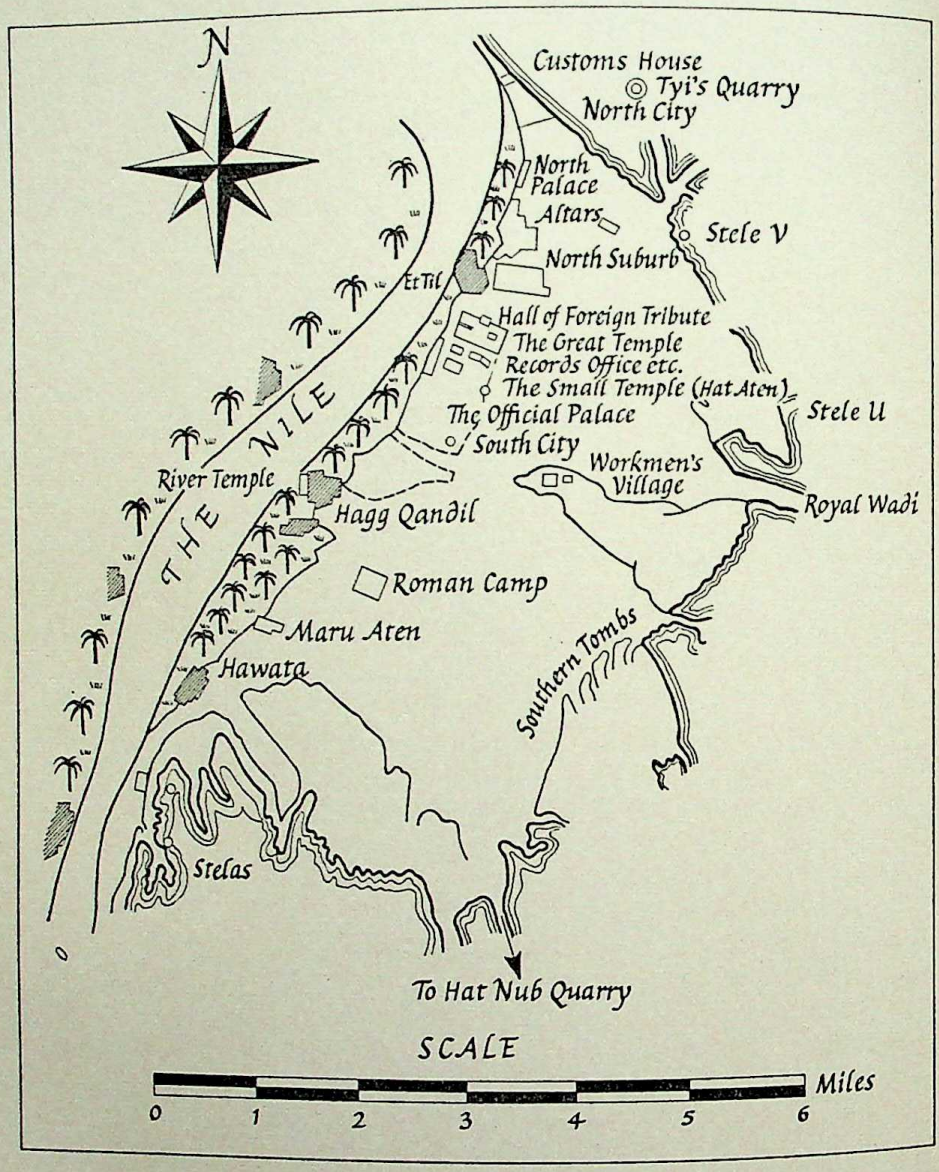


FIG. 64. Tell el Amarna: plan of the city (after Pendlebury).

of the inhabitants or to give them the personal interest in the running of affairs which is essential to the civic spirit. The capital was the home of Pharaoh, and everything led up to him. The gradual hierarchy of officialdom culminated in the person of the ruler; that, of course, was but natural. But the artists also and the skilled craftsmen of all sorts were literally in the

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service of Pharaoh; the best of them, together with the minor officials, did form a middle class such as was virtually non-existent in the provinces, but it was a middle class entirely dependent upon the royal court.

Excavation has told us very little about any Egyptian capital other than Akhetaton (Tell el Amarna), and conditions were not necessarily always the same. Thus we know that at Thebes, where ground-space was valuable, there were buildings of two storeys, whereas at Akhetaton, built *ab initio* on a virgin site, houses were laid out on a generous scale (Fig. 64) and had no upper storeys, no more than a light loggia on the flat roof; but as men's ideals of domestic comfort are shaped largely by tradition Tell el Amarna may well illustrate the Egyptian norm.

The unwalled town straggles for about five miles along the Nile bank, with a width varying from half a mile to a mile. There is no wall, no 'inner city' and no sacred Temenos. The temples, royal palaces and offices of state, which together take up a large proportion of the town's area, are not concentrated in a single quarter but are sited almost at random, so that, while there is a main central group which includes the vast Temple of the Sun's Disk, the official Palace, the Hall of Foreign Tribute and the Secretariat, the Northern Palace is a mile and a half away from it and the pleasure park of Maru-Aten is three and a half miles to the south. Apart from the fact that there were two main streets running parallel to the river there was no attempt at town planning; all that happened was that roughly rectangular blocks were allotted to claimants—the wealthy took up the best, fronting on the main roads—and the occupiers could build on them or sub-let them as they pleased; juxtaposed and in no set order we find here the palaces of the court nobility, the houses of the middle-class burgher and the miserable cabins deemed fit for the poor.

The typical middle-class house (Fig. 65)—they were all of one general type—lay in the centre of a walled enclosure entered by a single gateway on the street. Facing the entry there would be a small domestic chapel in which might be placed a stele showing Akhenaton worshipping the sun's disk—a guarantee of the family's orthodoxy. The house proper, built throughout of mud-brick except perhaps for a stone frame for the front door, was built round a central living-room whose walls rose well above the roofs of the surrounding chambers and had clerestory windows to light it and four wooden columns supporting its roof. Steps from the courtyard led to a porch built against the side wall of the house and thence one passed through a vestibule into a columned loggia having on its inner side three wide openings into the central room (Pl. 16). On the other three sides of this living-room there would be a living-room for the women of the house, perhaps a second smaller loggia, bedrooms, a bathroom and lavatory, and storerooms; the servants' quarters were outside, against the boundary wall of the enclosure, and the rest of the walled space was taken up by stabling, granaries and gardens. These are houses of civilized people with a keen appreciation of comfort, and they compare very favourably with the private houses at Ur in the opportunity

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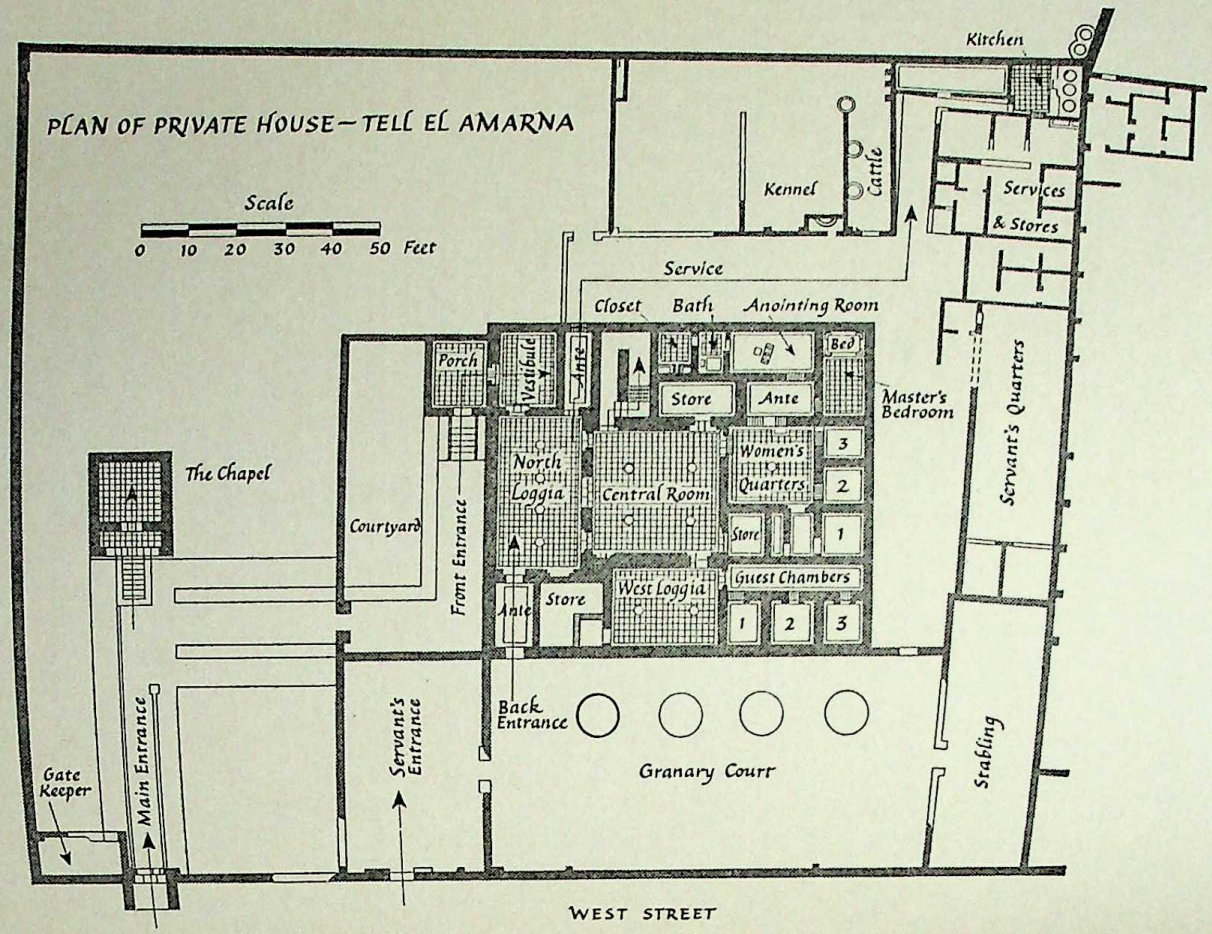


FIG. 65. Tell el Amarna: restoration of a typical house plan (after Pendlebury).

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that they afford for good living; certainly the sixteenth-century Egyptian townsman of the upper middle class was, so far as his domestic setting went, better off than the Sumerian or Akkadian merchant of the Larsa period. Two points, however, have to be remarked. In the first place, these are not city houses at all; they happen to be so grouped together, and the collection justi-

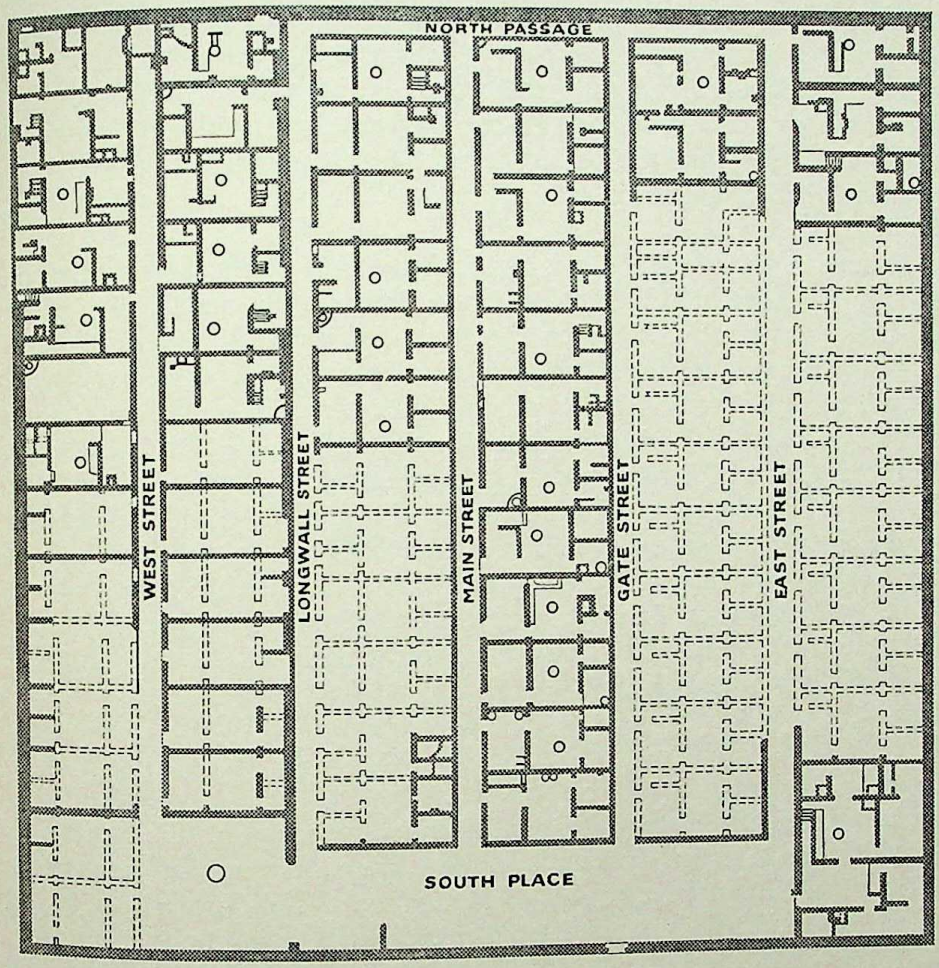


FIG. 66. Tell el Amarna: workmen's quarters.

fies the name 'town', but in their sprawling layout they violate the first principles of urban architecture and it is clear that they have behind them no traditions of urban life. In the second place, they do not represent any middle-class tradition; they simply reproduce, on a smaller scale, the mansions of the nobility, so much so that even the stereotyped colour-decoration of walls and ceilings is copied; evidently the owners, whom attachment to the court of Pharaoh had raised to a position of unaccustomed affluence, had no middle-class housing precedents which they could follow when making homes for

FIG. 65. Tell el Amarna: restoration of a typical house plan (after Pendlebury).

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themselves and had no other idea than slavishly to ape their superiors. Egyptian social history had really produced only two types of house, that of the great noble (at Akhetaton modified for the junior functionary) and the cottage. In the workmen's quarters (Fig. 66) behind the big houses, in the 'model village' built for the labourers employed upon the tombs to the east of the town, and again in the houses of the clerks near the Records Office there are monotonous rows of identical hovels containing each an entrance-hall, a living-room, a bedroom and a kitchen which the working man shared with his wife and children and perhaps with his animals also; they are like slave lines, and since they reproduce almost exactly the quarters provided for workmen at Lahun in the Twelfth Dynasty it would appear that five centuries of civilization had done nothing to ameliorate the living conditions of the Egyptian proletariat.

Civilization in Egypt did not result from any process of urbanization properly so called, for Egypt was never urbanized, never developed the material city or the civic life; it was a court civilization. The regimentation of the entire populace for the benefit of a limited social class, that of the Pharaoh and his favoured circle, produced the conditions in which the arts could flourish and find ample scope within the confines of that small society, and the outcome of it has not ceased to command the world's admiration. More spectacular than the broad-based civilization of the Sumerian and Babylonian peoples, the Egyptian was inseparable from the political and social régime peculiar to the country of its birth. Some of its products were indeed welcomed as models by the technicians of other lands, but in itself it was not an article for export,[6] as was the Mesopotamian civilization for which every citizen was a missionary.

## ELAM

Our knowledge of the early history of Elam is extremely small and comes to us secondhand, through Sumerian sources. The mere fact that there was a walled city of Susa whose origins go back to the al'Ubaid period, i.e. to the early fourth millennium BC at least, has been established by archaeological excavation, and there are records of other walled cities, Madaktu and Khaidalu; but for their character the only evidence is that of the fragmentary epic poems dealing with Erech and Aratta which, later in date though they be, may yet contain in their background if not in their incidents an element of historic truth.

According to the poems, Aratta was a city state situated in a mountainous region of Elam, somewhere beyond Anshan (which one had to traverse to get there), possibly in what is now Laristan. Its ruler is called not 'king' but by a title which may mean 'high priest', and we hear of an assembly of Elders and of 'knights' and 'supervisors', but the real monarch of the city is the Sumerian goddess Inanna who 'has placed the crown on the head of the Lord

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of Aratta'. This certainly suggests a theocratic government organized on much the same lines as the city states of Sumer; moreover, the people are represented as worshipping the gods of the Sumerian pantheon, and, yet more surprising, the king of Erech claims political suzerainty over this far-off Elamite state. Even if the fact that one of the epics gives to the Lord of Aratta the Sumerian name Ensurkushsiranna does not warrant the conclusion that the ruling caste consisted of Sumerians, yet it seems safe to assume that Elam was early, in the third millennium, divided into city states formed on the Sumerian model, and that these were, culturally and sometimes politically, very much under the influence of Sumer. Sargon of Akkad, and his son Manishtusu, fought against Elam and reduced it to subjection, but an Elamite governor of Susa, who had been appointed to his post by Naram-Sin, started by aggrandizing himself through the conquest of northern Iranian tribes such as the Guti and finally revolted and made himself independent. The northerners, the Guti and the Lullubi, then asserted themselves; but the few monuments left by their kings—rock reliefs—show that their culture was largely derivative, inspired by Sumerian or Akkadian models, and their written language is Akkadian. In the middle of the third millennium the Guti sacked Babylon and made themselves masters of the delta country and also, it would seem, of Elam; but they were barbarous masters, quite incapable of organizing the territories which they overran. Indeed, the city states appear to have retained their individual identity up to the close of the millennium, for the kings of the Third Dynasty of Ur dealt with them piecemeal and make no mention of a united Elam; on the contrary, there are records of rulers of different Elamite cities, Susa, Ashnunnak, etc., who had the title of *patesi* (*ensi*) and must therefore have held office from the kings of Ur of the Third Dynasty,[7] and Bur-Sin is shown by tablets found at Susa to have been in undisturbed possession of that city while other Elamite cities—presumably city states—had to be forcibly subjugated. But that the dynastic principle which prompted so many attempts to unify Sumer operated in Elam also appears to be proved by what is narrated of the downfall of the Third Dynasty; the destruction of Ur is attributed not to this or that Elamite state but to 'the Elamites'; the cult statue of Nannar was carried off to Anshan, but the victor (probably Kudur-nankhundi) was king not of Anshan but of Elam. Hammurabi of Babylon, after a long series of campaigns, defeated the Elamites, but when, a hundred years later, Shutruk-nakhkhunte re-established the kingdom of Elam there is no sign of originality other than a revival of the Proto-Elamitic script. Of the history of the following centuries nothing is known, but when, towards the end of the period dealt with in this book, a vigorous dynasty revived the glories of the past, the cultural dependence of Elam on Mesopotamia was still evident; the bronze statue of Napir-asu, queen of one of the first rulers of the thirteenth-century dynasty, is technically a fine piece of work, but so far as style is concerned it might as well have been made at Babylon as at Susa.

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Granted that the al'Ubaid culture was largely derived from Elam it must yet be acknowledged that the early promise given by painted pottery of Susa seems to have found no fulfilment in the country's later history. Our knowledge is certainly slight and discontinuous: there are long periods of utter darkness, so far as archaeology is concerned, and literary evidence is seldom

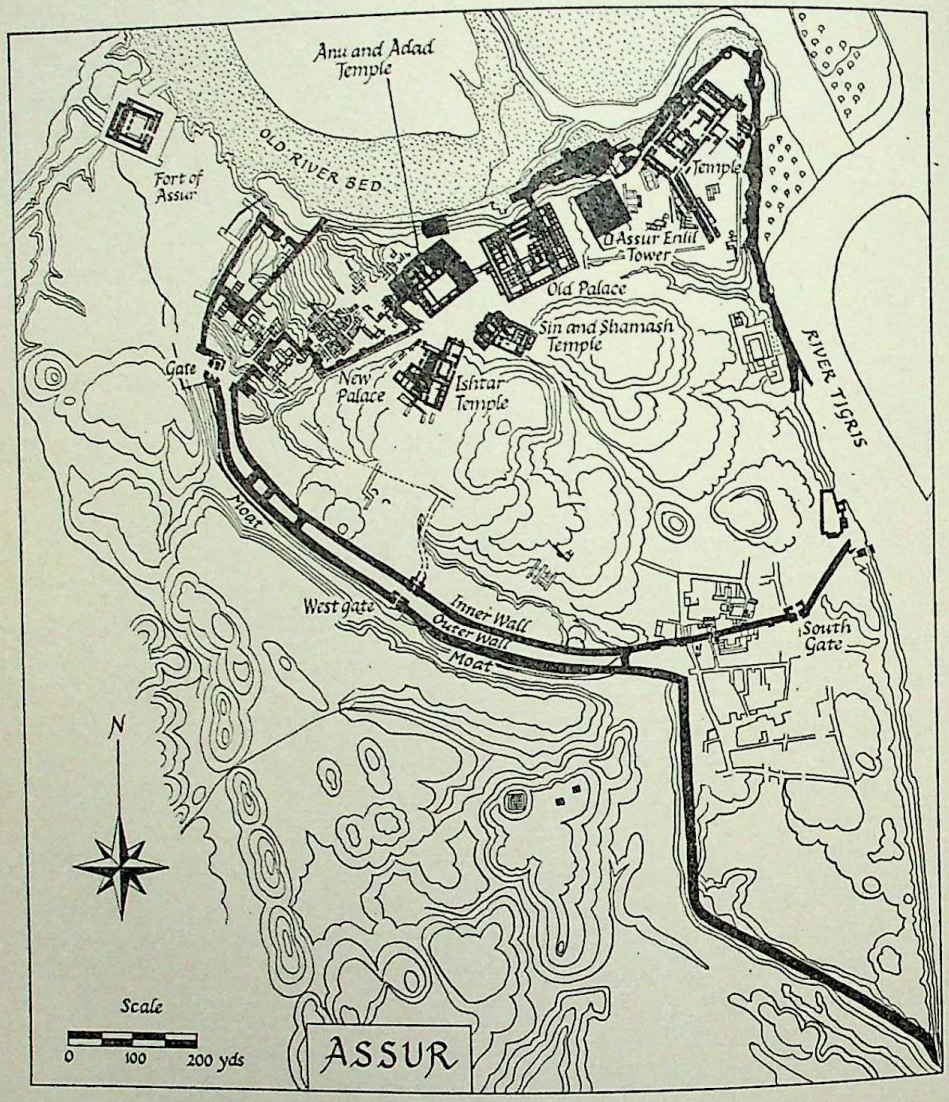


FIG. 67. Assur: general plan (after Andrae).

forthcoming. On the whole it would seem that social conditions in Elam were not unlike those of Sumer and Babylon, and that, in general, the part played by Elam in promoting advance in hither Asia was that of a middleman for Mesopotamian cultural exports rather than that of an originator. But the

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detailed evidence necessary for any firm conclusion is lacking, and even the tentative suggestions here put forward are disputable.

## THE NORTHERN SEMITES

More than any other people, the Akkadians and the Assyrians who later settled in northern Mesopotamia submitted to the influence of the superior

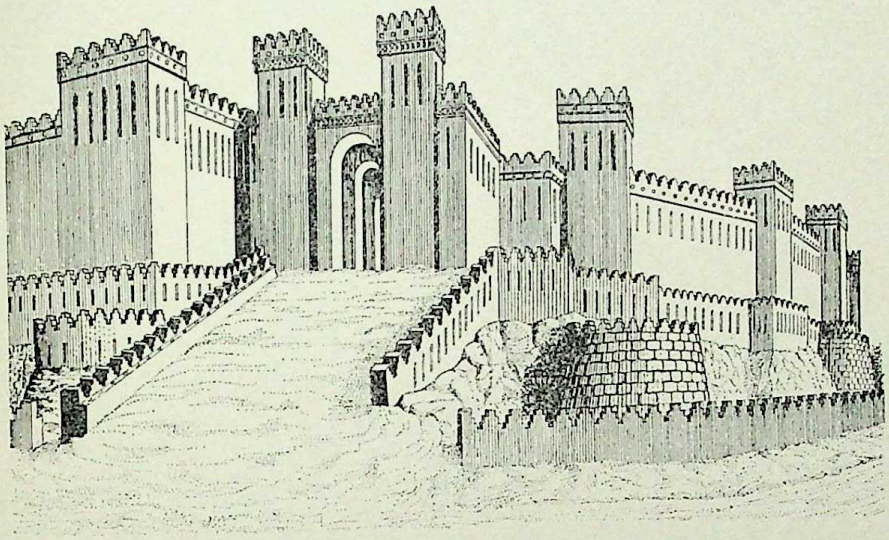

FIG. 68. Assur: a land gate (after Andrae).

civilization of their southern neighbours. Themselves of a different stock and with different traditions, they assimilated an alien setting of life gradually and they preserved to the end a character quite unlike that of the Sumerians; the Assyrian autocratic monarchy, exercised by ambitious warrior kings, resulted in a purely military state which could not but find expression even in the material aspect of their cities,[8] but, for all that, it is only in the light of Sumerian traditions that the north can be understood.

This mixed culture is well illustrated by the excavations at Assur, the old Assyrian capital. Here we have what is really a contour fort, built on a promontory, secured on two sides by the waters of the Tigris, running at the foot of rocky cliffs, and on the landward side protected by a moat and massive walls of defence (Fig. 67). Only two gates, and those strongly fortified, gave access through the land wall (Fig. 68), and one water-gate opened on a quay on the north side of the promontory; the city is designed as a stronghold, not grown up from simple beginnings as a market town or open village but planned by a military architect who has taken advantage of all the accidents of terrain to make his fortress impregnable.

The whole of the northern side of the city is given over to temples and

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palaces (Fig. 69); the priest-king as the earthly Power is housed side by side with Assur, the god-king who is the heavenly Power, and the temples of the other gods, Anu and Adad, Sin and Shamash, Ishtar and Nabu, cluster round the royal palaces. There is no formal Temenos. The oldest of the temples, that of Ishtar, which dates from the Early Dynastic period, is 'wholly un-Babylonian and un-Sumerian' in ground-plan; judging from the clay model shrines found here the building was in fact of the type of the more or less contemporary temple at Alalakh with its low flat-roofed fore-chamber and lofty sanctuary lit by windows; of a 'northern' type, therefore, which was characteristic of the Amoritic or Hurri[9] peoples. In building the Ishtar temple (*c.* 3000 BC) the king of Assur (and later kings followed his example for nearly two thousand years) adopted the form traditional with his own

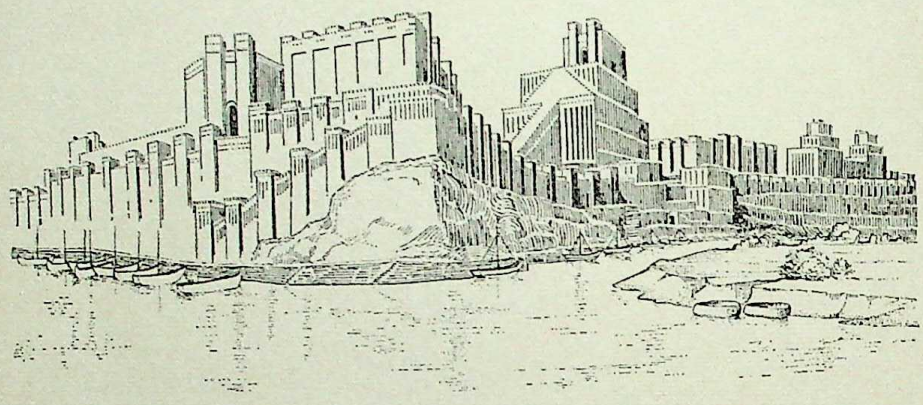

FIG. 69. Assur: temples and palaces (after Andrae).

people; but the statues which were dedicated in it are purely Sumerian. Other temples of later date are of the southern type and, with their ziggurat towers, might have been transplanted from Babylonia.

Very little is known about the residential quarters of Assur, but in view of the artificial character of the city's foundation it is at least probable that here, as in the smaller and less important town of Tepe Gawra in northern Assyria, 'the town planning is orderly, streets are well distributed and there is a good drainage system'. Early private houses are of 'northern' type (Fig. 70), the open houses of people who in simple village communities had not been trammelled by ideas of domestic privacy; but as time goes on first the richer citizens began to imitate their southern neighbours, building for themselves the secluded type of homes which are the rule in such a city as Ur in the second millennium BC, and in due course the rest follow their example. A further proof of the close relations between north and south is the fact that when, under the Third Dynasty of Ur, the Sumerians began for the first time to bury their dead not in outlying cemeteries but in brick vaults underneath the houses of the living, the same revolutionary change takes place in Assur

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also. It is, of course, true that at this time Assur, and the whole of the north country, had been brought into subjection by Ur-Nammu of Ur, and conquest may well have led to a settlement of Sumerian merchants and others, in addition to the officials appointed to carry on the government of the Sumerian overlord, so that the exchange of ideas was the more easy; but

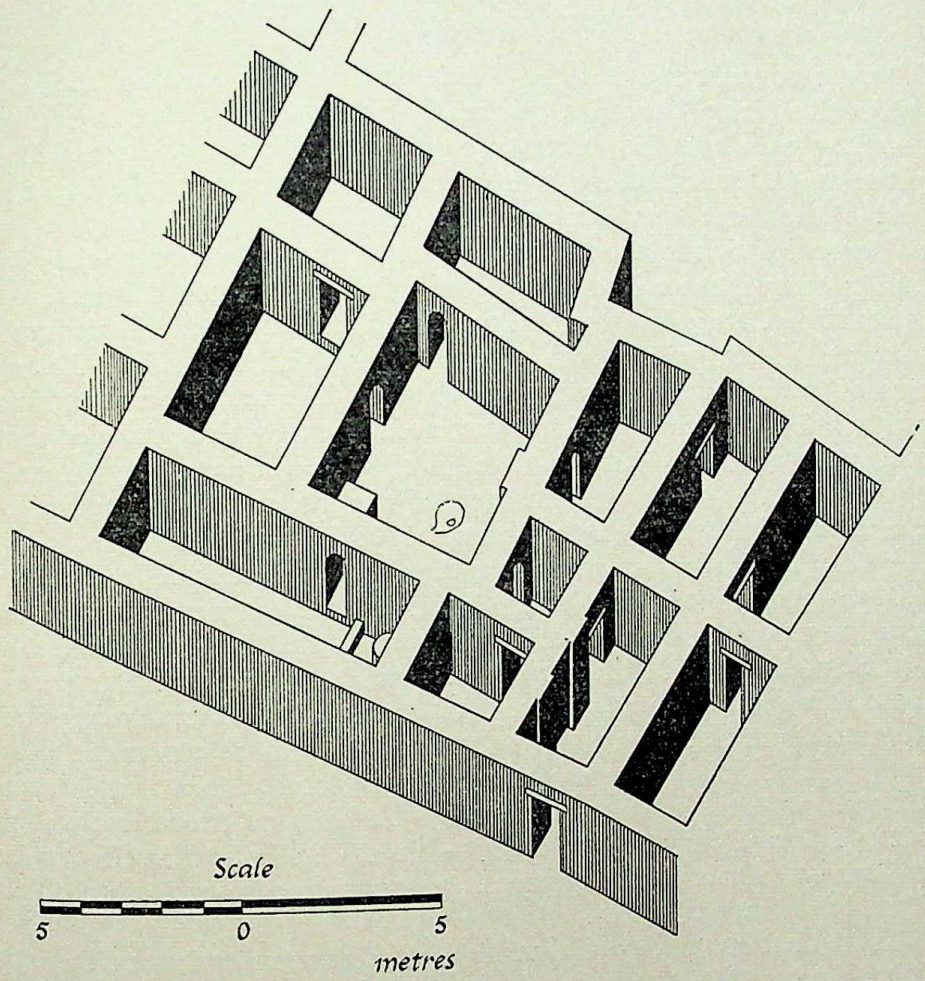


FIG. 70. Northern type of house (after H. Frankfort).

an innovation in anything so conservative as burial customs must mean the practical unification of the northern and southern cultures.

In the following age Assur regained its independence and a measure of importance; Shamshu-Adad I, an elder contemporary of King Hammurabi of Babylon, seems to have ranked almost as his equal; but a few years after Shamshu-Adad's death Hammurabi attacked Assur and added it to his dominions. In the Kassite period the connection was largely broken off and

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the warlike rulers of Assur emphasized more and more the military character of their kingdom, moulding Assyria into the form in which we know it best in the first millennium BC. At that time the difference between Assyria and Babylon is perhaps more striking than the resemblance; but in its early days Assyria must be reckoned a cultural dependency of Sumer.

## THE HURRI AND THE AMORITES

To the north-west and west the Hurri and the Amorites of Syria alike fall within the orbit of Sumerian culture. It was through the Hurri as intermediaries that the Anatolian Hittites were to derive their knowledge of Mesopotamian art, letters and law. The rulers of Mari, on the middle Euphrates, could figure in the King Lists as forming one of the Sumerian dynasties with no suggestion that in the eyes of the people of the delta states they were foreign conquerors or in any way alien. The earliest buildings tend to be rather of the north Mesopotamian type,[10] but in the second millennium they conform to Babylonian models, and the art of Mari, from Early Dynastic days onwards, is identical with that of Sumer. The many documents found make it clear that the civic ideal was precisely that which prevailed in the south; this was a city state, governed in the name of a deity by an earthly ruler who in theory was but the agent of the god, and the Sumerian gods shared with the Semitic Dagan the worship of the people of Mari.

Farther north the Sumerian influence was less pronounced. In the Habur valley, where the tributary of the Euphrates made agriculture profitable, small towns came into being at least as early as the founding of Eridu, the first Sumerian city, and they have no cultural connection with Sumer at all. By the time of the Uruk and Jamdat Nasr periods contact with the south had introduced Sumerian pottery and seals and metal objects to the Habur, but judging from the curious 'eye' idols the local religious cult was not affected and only military conquest by the kings of Akkad brought the valley under Mesopotamian control—Naram-Sin built himself a palace at Brak—a control which apparently lasted up to the end of the Third Dynasty of Ur.

These Habur towns lay off the main lines of communication and there was no valid reason for Sumerian activity in their sequestered retreat, but where the westward trade-routes ran commerce brought the higher civilization of Mesopotamia to bear upon the culture, the politics and the religion of the Syrian peoples.

Harran, as a centre of the worship of Nannar, was almost a sister city of Ur; and although practically nothing is known of its history and character it would seem to have maintained its Babylonian connections right down to the days of Nabonidus in the sixth century BC. More details are available about the little city state of Alalakh on the lower Orontes. Commanding as it did the road along which hard timber went from the Amanus mountain forests to

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Mesopotamia, it was peculiarly open to Sumerian influence, so much so that in the Early Dynastic period the architecture of the royal palace is borrowed from that of the Euphrates valley. One of the many little city states which parcelled out between them all north and central Syria, Alalakh may be taken as typical. In the eighteenth century BC the town proper was enclosed in a heavy wall (Fig. 71) rising from a *glacis* about 20 feet high, this being a military feature characteristic of north Syria; the only gate found was defended by a massive gate-tower, but there was probably a second similar gateway at the south-east end of the town, and on its south-west side a small postern gate giving on the river bank. The walled enclosure was an irregular oval rather more than 700 yards long and some 200 yards wide, lying north-west by south-east; at the north-west end, where it had the benefit of the cool winds blowing from the Taurus mountains, were the royal palace and the temple of the city's god, and next to the palace, immediately within the town gate, was a fortress housing the royal troops and commanding the rest of the city. The remainder of the walled area seems to have been densely occupied by private houses; built of mud-brick upon stone foundations and sometimes at least of two storeys, many of them covering a considerable area, they were generically of the open 'northern' type, but far from uniform in plan, as if each householder had his own ideas as to what constituted comfort. But the general layout appears to have been fairly regular, with straight streets running at right-angles except where they were deflected by the direction of the town wall. It is probable that the walled city, set high on the mound formed by the ruins of older buildings, was really an acropolis and that there was an outer town on the low ground at its foot; in that case it would conform to the pattern of Carchemish, where there was an acropolis, an inner walled city and an outer town also with its lines of defence, as well as to that of other (unexcavated) towns in the Amq plain where the remains of built-up areas at the foot of the *tell* are quite obvious. Alalakh undoubtedly depended upon its trade, in cedar-wood primarily and also in ivory. As a small state it preserved its autonomy with difficulty and was at various times a vassal of Mitanni, or of Hattusas, or of Yamkhad, but essentially it was a city state whose king, like the Sumerian kings, governed as the chosen representative of the city's god—actually the very name 'Alalakh' seems to be derived from that of the patron deity. There is a certain amount of evidence to show that the Syrian conquests of the Twelfth Dynasty Pharaohs brought Alalakh, like Ugarit, under Egyptian control, but if the king of Alalakh professed allegiance to Pharaoh it was a political façade which affected the state but little; the prevalent cultural influence was that of Mesopotamia. Thus, of some 160 seals and seal-impressions found on the site, eleven are Hittite, ten are Egyptian or Phoenician imitations of Egyptian, and all the rest cylinder seals (and therefore of Mesopotamian type) with designs which may be Hurri or Amorite but often go back to Mesopotamian originals; moreover, the inscriptions on them are in cuneiform, as are the many tablets found, and

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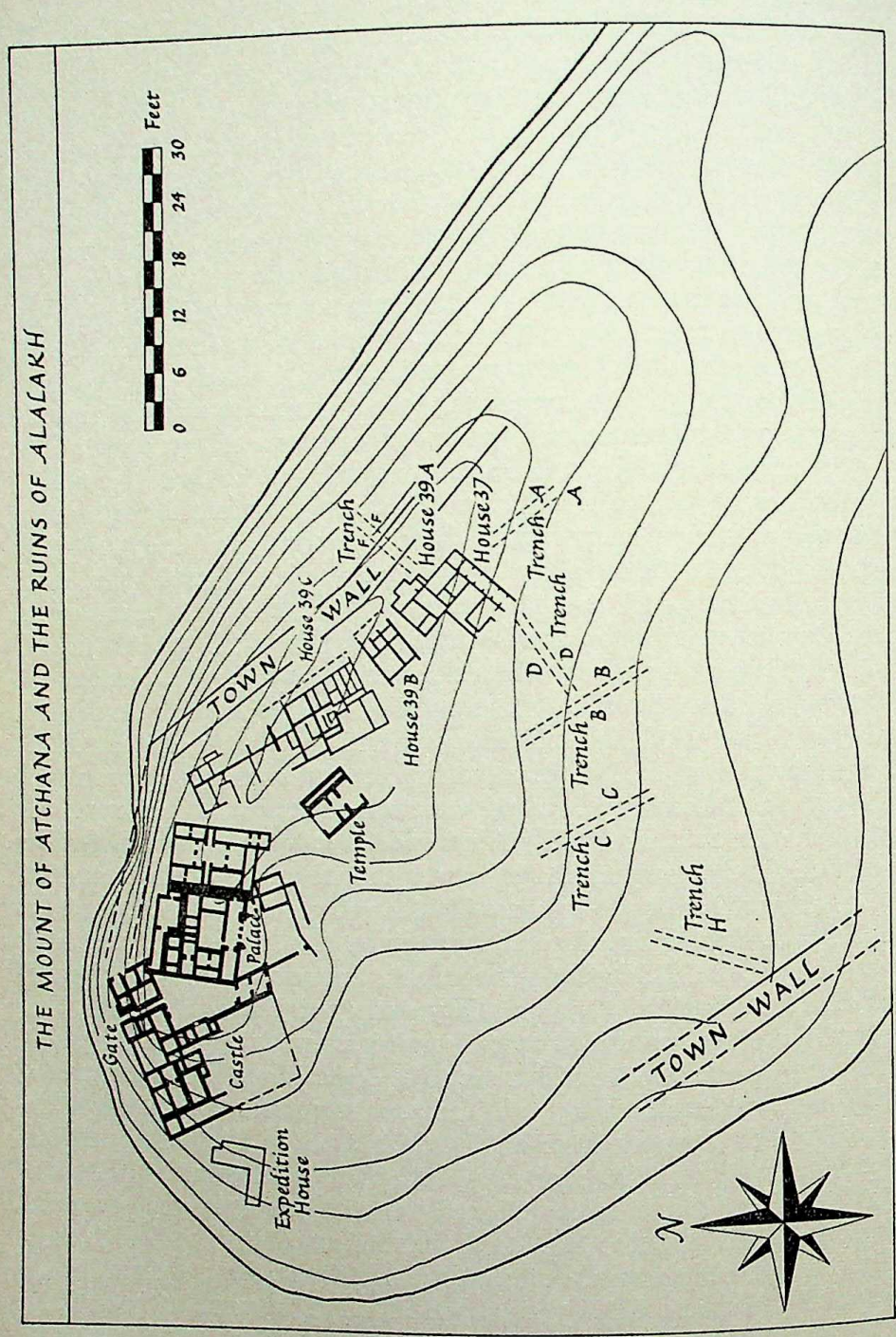


FIG. 71. Alalakh: the walled city.

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the writing shows a local dialect of Akkadian to have been the language in ordinary use.

Throughout Syria it was Mesopotamia, not Egypt, that set the pattern. Thus at Qatna on the upper Orontes, although much of the material culture—the pottery and so on—is Syrian, as one would expect, yet all written documents are in Akkadian, and side by side with the local king, who has a north Syrian or Hurri name, there appears a Babylonian official, a *sakkanaku*, who was presumably installed by the king of Ur; moreover, it is the Sumerian goddess Nin-Gal (of Ur) who is 'Lady of the City', and it is noteworthy that Nin-Gal, perhaps because she was the goddess of the Mesopotamian suzerain, ranks high above all the other deities, who are called 'the king's gods', i.e. the native gods of Syria. The temple at Qatna from which the tablets come is dated to just before 2000 BC; it is therefore clear that up to the time when the Pharaohs of the Twelfth Dynasty invaded Syria, Egyptian influence there—except upon the sea-coast—was negligible, and all the higher elements of culture were derived from Mesopotamia. Admittedly, we know but little of the character of the inland towns of Palestine. The ruins of Megiddo, the stronghold commanding the fertile valley of Esdraelon, are imposing in themselves, but tell us nothing of its constitution during the Bronze Age; Hazor shows us a provincial, not to say barbaric, culture, a poor relation of the north Syrian; the fact that the little hill town of Jerusalem was under the rule of a king who was also the High Priest of Aleyn-Bel at least removes Jerusalem from the sphere of Egyptian influence. On the whole the generalization probably holds good that these petty kingdoms or states, while essentially Canaanite and not necessarily under Mesopotamian control, were both by trade and by politics oriented rather towards the east.

## PHOENICIA

With the Phoenician coastal cities (Map XV) the case is entirely different. The sites of the Syrian cities were dictated by the fertility of the soil and their economy was ultimately based on agriculture. Even Alalakh, for all its interest in international trade, had its share of the rich Amq plain; Harran had both irrigated land and wide pastures; Aleppo was the centre of the steppe cornlands; Kadesh commanded the upper Orontes valley; Qatna's great ramparts, a square measuring a thousand yards either way, rose from the fertile plain of Homs, and Damascus was set in its fabulous oasis watered by twin rivers. The contrast afforded by the Phoenician cities is illuminating. Ugarit with its 'White Harbour' lies on one of the very few bays on the Syrian coast that give even relative shelter to small ships; Arvad is a tiny rock island heavily walled except on its eastern side which faces the roadstead between it and the mainland; so small is it that the Arvadites were obliged to have an outpost,

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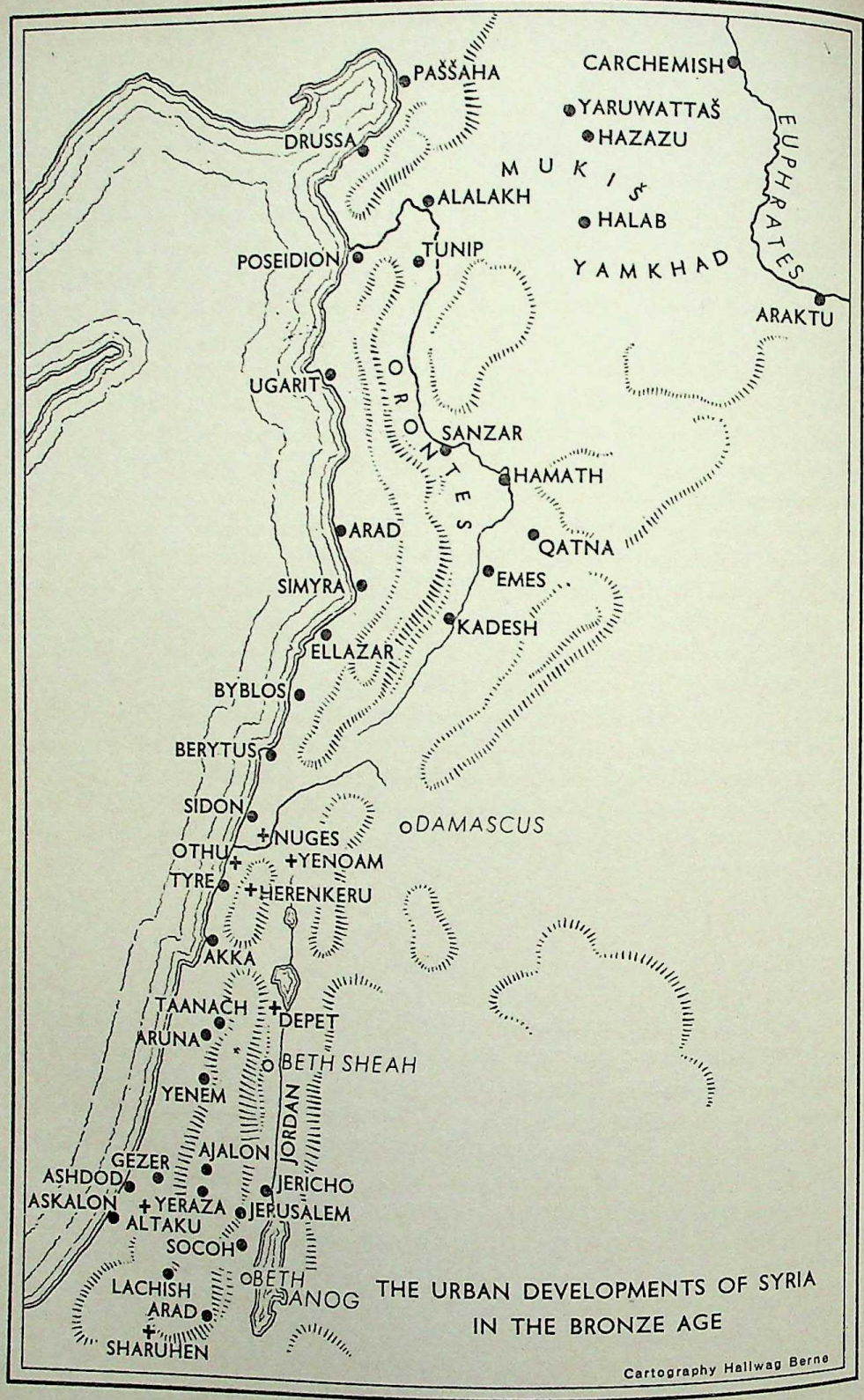


MAP XV

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Amathus, on the mainland to assure their food supply. Tripoli was a promontory fort girt on three sides by the sea, and although there is a fertile plain behind it the site of the city was evidently determined by the easily defended rocky harbour. Byblos also has a harbour protected by reefs at the stream's mouth; Berytus occupies a headland, again with its harbour, which in the second millennium BC may well have been virtually cut off from the hinterland by a lagoon now filled with the silt deposited by the Nahr Beirût; Sidon lay partly on a promontory, partly on an island, and Tyre was an island city cut off from the nearby coast. It must be quite obvious that these towns do not represent the urbanization of a primarily agricultural people; their sites were chosen as affording facilities for shipping, and they were founded for commercial ends.[11] Their founders must have been a seafaring people—which would accord with the Phoenician tradition that their original home was on the Persian Gulf—and they must already have been familiar with city life; from the earliest times of which we have knowledge the coast settlements of the Phoenicians were walled cities. Seeing that there were no rivals at sea to be feared and that the town's defences were on the landward side it would seem that the settlers were protecting themselves against attack by the original inhabitants of the country. If the hinterland was potentially hostile the fact would emphasize the geographical isolation of the cities, which in itself was sufficient reason for each forming an independent city state under its own king; common religion and common economic interest might join them together in a loose confederacy, but politically each was autonomous. Each city had its patron god, Melkarth at Tyre, Astarte at Sidon, Ba'al (Hadad) at Ugarit, but there is no reason to think that the government was theocratic in the sense that a Sumerian government was theocratic; it is true that the name 'Melkarth' means 'King of the City', but the human prince of Tyre, though undoubtedly he ruled by the grace of god, was a prince in his own right.

Strong as was the civic spirit of the Phoenicians, it did not take the form common in Middle Eastern city states; there was never an attempt at aggrandizement by means of aggressive warfare. For the citizens it was of course desirable that they should control a territory large enough to supply them with foodstuffs, but they had no ambitions beyond that. They were merchants, craftsmen and carriers. The staple article of trade was the hard timber got from the Lebanon; Sidon had its famous manufacture of purple dye; the Phoenician goldsmiths and carvers in ivory were renowned all over the Middle East—deft imitators and adaptors of other men's inventions they could meet the demands of all markets alike; their embroideries sold readily, and they exported gums and incense. Their arts were the arts of dwellers in cities, not of country folk, and as their goods were to be sold abroad their livelihood depended upon the sea; therefore, so long as the sea was open to their shipping and their home base was secure they did not care to burden themselves with landed possessions. If the number of citizens became too large for the city—and the cities were all small—they did not try to expand

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inland, but rather sent out colonies overseas where their surplus population might develop new markets. In the interests of trade they asked for a quiet life; they would fight well in self-defence, but generally preferred to secure immunity by diplomatic means. If, as is probable, they took part in the Hyksos invasion of Egypt, that was only to reassert their independence against the imperialism of the Twelfth Dynasty Pharaohs; for the rest the Phoenicians show us the phenomenon, rare in ancient history, of a rich and an energetic people who insisted on liberty, quarrelled little amongst themselves and did not indulge in wars of aggression against their neighbours —though they might conduct slave-raids upon coasts where there was no chance of profit by trade, filling the role of pirate or merchant as the occasion arose.

## CRETE

Urbanization in the islands of the Aegean started early. At Phylakapi in Melos the little town dates to the very beginning of the metal age, and from the elaborate structure of its outer walls one might conclude that self-defence was the chief motive that induced men to leave the open countryside and crowd together in strongholds; cities may have been the answer to piracy. In Crete a Neolithic town site has been found at Katsaba. At the beginning of the Middle Minoan I period Knossos had an enceinte wall of massive masonry and a lofty keep or tower dominating the northern entrance and the harbour gate—and in later days the northern approach to the palace itself (the approach, as Evans says, most liable to a piratical raid) was strongly fortified. It is not possible to trace the process of the city's growth, which was due to the vast wealth brought in by its overseas trade; but in the days of its greatest prosperity it can have had few rivals in the Middle East. The whole of the old walled town had been levelled to provide a site for the royal palace, a huge labyrinth of a building measuring about 120 metres in either direction and rising to a height of three or more storeys. Round it, and up to a distance of 400 metres from its walls, there were well-built houses, free-standing but set closely together, two storeys high, which clearly were the homes of the citizens of the upper class; beyond these again were the humbler dwellings of the poorer class, small and rubble-built, probably laid out on the block system that we find in such country towns of the period as Gournià and Palaikastro; while the 'aristocratic quarter' has a total superficies of about 1,125,000 square metres, the area of the whole town is very nearly twice as great. At first sight the general layout of Knossos appears not unlike that of some Sumerian city with its threefold division of Temenos, inner walled city and outer suburbs; but that superficial resemblance only emphasizes their real disparity. It is indeed true that in the Knossos palace there was room for a domestic shrine, or shrines, dedicated to the worship of the Snake Goddess, true too that the symbol of the double axe which is incised so freely upon its walls may have been meant to put the building under the

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protection of the god; but it is essentially a palace, planned to house the wealth and minister to the luxury of a human king and a pleasure-loving court; nothing could be less like the walled-in sanctum of an unapproachable god which formed the core of civic life in Mesopotamia.

## ANATOLIA

If the walled cities of Crete were intended for defence against piracy, those of Asia Minor were built for protection against land enemies. The physical character of the country favours the subdivision of the population into relatively small communities each sequestered behind its barrier of mountain ranges; such was indeed the texture of society throughout history right up to the Turkish conquest (Map XVI). By the beginning of our period the divergent cultural development of such isolated communities had already resulted in something akin to racial differentiation and perhaps even by that time immigration of completely alien peoples both from the Caucasus and from south-east Europe may have complicated matters further; each group under its own chief would feel the need to safeguard itself against its neighbours by concentration of its forces and the fortification of its dwellings.

A new factor came in with the exploitation of metal. Its great mineral wealth at once gave to various parts of Asia Minor an importance quite out of proportion to the cultural level of its inhabitants. Mining prospectors opened out new vistas of prosperity; but since the metal was of little value unless it had an outlet to a paying market, trade-routes became all-important. The producing areas had to export their products; the non-producers through whose territories the goods were obliged to pass could profit both by exchange and by imposts; in neither case could the full advantage be reaped unless there was an organized government to regulate business and a military power to enforce the government's policy. To a large extent therefore urbanization in Asia Minor was due to international trade, and the trade centre was the natural seat of government. As early as the twenty-fourth century BC, as we know from the Sargonid poem 'The King of Battles', Mesopotamian merchant colonies were established in the heart of Asia Minor, and the excavations at Kultepe show that such a colony of foreign traders would be situated at the capital of the country concerned—but not in it; an open suburb immediately outside the city's walls, it guaranteed the concentration of trade but was completely under the control of the local ruler. Similarly, Troy owed its early foundation and its subsequent prosperity to the fact that it commanded the sea passage of the Dardanelles down which came the merchantmen bringing wool from south Russia and copper from the south shore of the Black Sea. Certainly the metal trade must have been responsible for the wealth of the chiefs of Alaca Höyük in the second half of the third millennium

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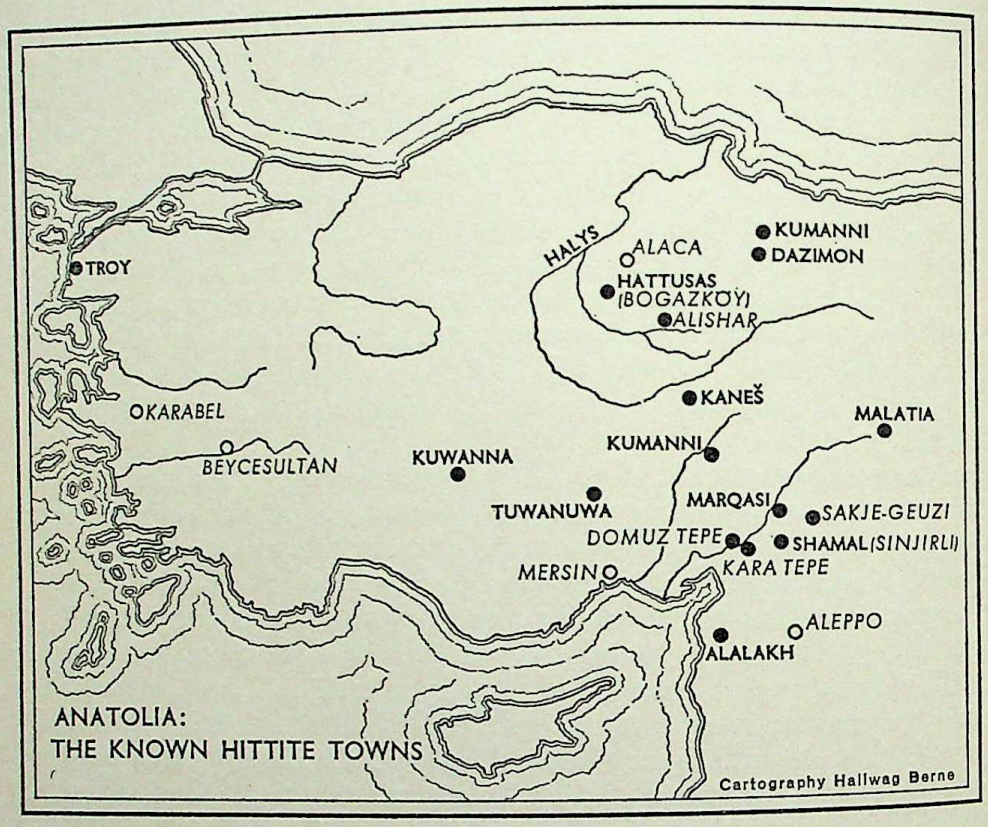
BC; not only the amount of gold and copper in their tombs but the remarkable technique of the craftsmen who made those vessels and ornaments is proof of this.

Naturally, as military conquests or political alliances, welding together what had been separate city states, created a new system, new capital cities arose to meet the changed conditions—an indirect result of the prosperity ultimately due to commerce. Thus the Hatti, gradually extending their power




MAP XVI

northwards, had two capitals in succession[12] before they finally settled upon Hattusas (Boğazköy). Again, in western Anatolia, we find at Beycesultan a royal city (possibly the capital of the kingdom of Arzawa) in which, as early as 2000 BC,[13] the people were already familiar with the use of hieroglyphic writing and included at least an element of Indo-European stock. It would appear that in the first centuries of the second millennium the process of urbanization was far advanced in Asia Minor, and although it was never so thickly populated as was Syria, walled cities may have been numerous enough, and many of the city states mentioned in later Hittite records may have existed even then.

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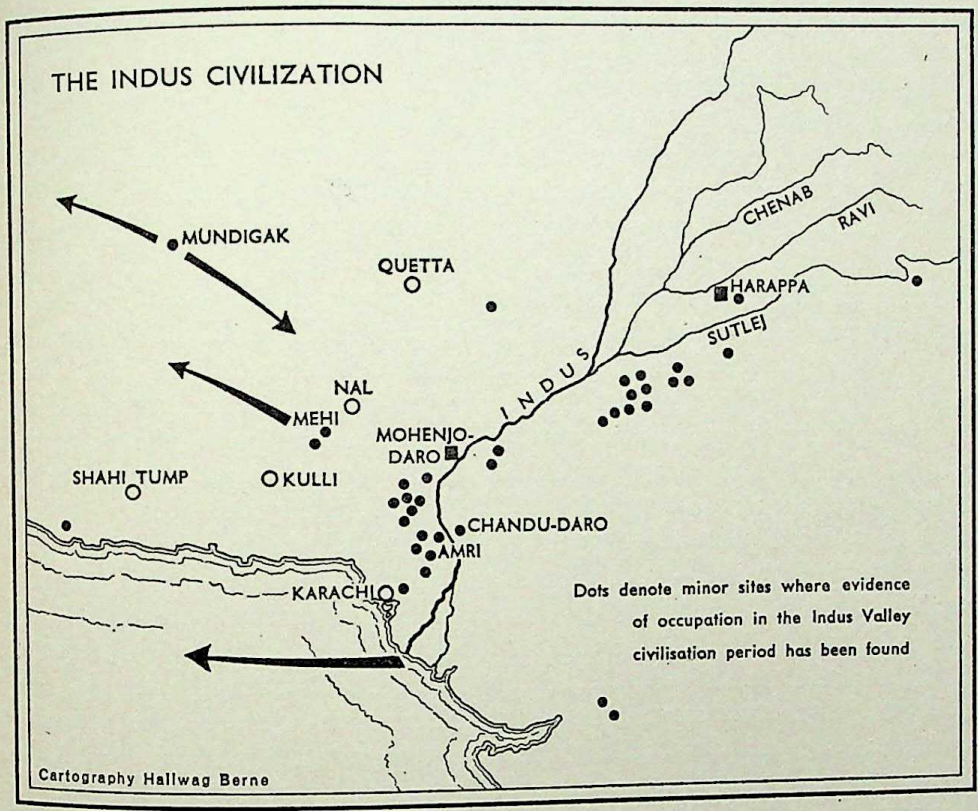
## INDIA

There exists no literary tradition throwing light on the origin and growth of the great cities of north-west India. Archaeological exploration in the Indus valley and west of it in Baluchistan has brought to our knowledge the ruins of a large number of Early Bronze Age settlements (Map XVII), some of which are of a size that warrants the description of them as towns and of a height




MAP XVII

that shows them to have resulted from a long period of growth. The remains, mostly in the form of painted pottery, exhibit divergences sufficiently marked for the archaeologist to speak of different cultures; but the differences may well be due to the independent development of kindred communities isolated from each other by vast distances and by difficult country. Some at least of the towns were walled, but that is to be expected in a land infested by marauding mountaineers. For the most part they must have started as centres of agricultural districts, but in one or two instances trade considerations may have influenced the choice and character of the site; thus the so-called Kulli culture possessed at Mehi, in southern Baluchistan, what seems to have been

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a commercial harbour, and here there have been found decorated stone vases which prove a connection with Sumer in the Early Dynastic period of that country. Still earlier contact is suggested by the discoveries at Mundigak in southern Afghanistan; there, below the stratum in which the characteristic Kulli pottery occurs, there are massive mud-brick buildings whose walls are relieved with the half-column decoration topped by stepped merlons which is typical of Sumerian architecture (Pl. 13, b), and the pottery associated with the buildings is closely akin to if not identical with the 'Uruk' ware of Mesopotamia; this might well be a 'half-way house' for transcontinental trade.[14]

The valley of the Indus is a vast plain, an irregular triangle 950 miles long and up to 700 miles wide, watered by the Indus river and its tributaries the Sutlej, the Ravi and the Chenab. Barren as much of it is at the present day, it is potentially and once was amazingly rich, its soil well watered and capable of supporting a very large population. The natural conditions resemble those of Mesopotamia rather than of Egypt. The vast alluvial plain is faintly convex in profile and slopes towards the sea far more steeply than does the Euphrates delta (1:7,000, nearly double that of Egypt); the silt content of the river water (435: 100,000) is less than that of the Euphrates but more than double that of the Nile; the essential fact is that the annual inundation occurs in the summer, lasting from May to August, so that for the purposes of agriculture irrigation must here, as in Sumer, be of the perennial type effected by a system of canalization. Regarding the details of that system in early times nothing is known; the accumulated silt of centuries has raised the level of the plain by some 12 feet, obliterating all traces of ancient waterways, but the ancient, like the modern, engineer must have utilized the pronounced fall of the river, and in all probability[15] the irrigation system of the third millennium BC was worked on the same principle as that of today. Canalization on the scale needed to water so great an area requires, as we have seen in the case of Sumer, a measure of centralization and co-operative effort which is beyond the scope of a village community, and we might, on the Mesopotamian analogy, expect to find the valley divided into city states corresponding to irrigation units. There may be evidence for the early stages of such a social development in the fact that along the middle course of the Indus there is a chain of settlements, some of them (such as Kot Diji, 65 miles north of Hyderabad in Sind) of considerable size, representing for the most part the Amri-Nal culture, which is contemporary and sometimes coincident with the Kulli; but all of them, like the Kulli sites in general, either go out of occupation altogether or are overlaid by buildings of the Harappā type. After that, the uniform distribution of the Harappā culture seems to imply the political unification of the country—a unification parallel to that of Egypt under Menes; if the striking similarity in the planning of Harappā and Mohenjo-daro justifies us in regarding the two cities as twin capitals of the same ruling power, then their existence is fully explained by the difficulty of controlling

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from a single administrative centre the irrigation of an area so immense as that of the Indus valley.

The generally accepted term 'Indus Valley Civilization', resulting as it does from the accidents of discovery, must not be too literally stressed. The ruins of a very large city of the type have been found 75 miles south-east of Quetta, i.e. beyond the watershed that bounds the valley on the north. In the Nabada valley in Gujrat, and as far south as Cutch, town sites have been unearthed which share in the same civilization. Whether or not they were subject to the same government as the Indus cities we do not know; for a common culture need not mean a unified control. Certainly their existence proves that what we call the 'Indus valley' or the 'Harappā' civilization had a far wider extension than was at first supposed; but in the present state of our knowledge it is legitimate to assume that the centre of that civilization was in the fertile valley of the Indus and its tributaries.

The two main cities lie about 350 miles apart, Harappā on the banks of the river Ravi, Mohenjo-daro on the Indus. The archaeological evidence shows that their foundation marked a definite break with local tradition; it is a case of imposition, not of natural growth. Between the bottom of the massive brickwork of Harappā and the alluvial deposit that overlies the virgin soil there is only a thin 'occupation stratum' implying a village rather than a town, and the potsherds found in it are of the old Baluchistan ware, quite unlike that of Harappā itself. Even if it be held that the Harappā pottery might be really no more than a parallel development comparable to the variant wares of Amri-Nal, Kulli, Zhob and others found in different areas of Baluchistan and the Punjab, none the less it is certain that it did not develop at Harappā, any more than did the architecture and the metallurgy, which are without precedent in those other cultures. The entire civilization comes suddenly upon the scene already formed, already, in fact, so stereotyped that although the city was to pass through vicissitudes which must represent many centuries of time, yet in that time there was no change in its arts and crafts; the various superimposed strata afford no typological sequence whatsoever. Precisely the same evidence is forthcoming from Kot Diji, where the stratification was far more elaborate than at Harappā and gave a clearer picture. The eleven lower occupation-levels show a local 'Kot Diji' culture, apparently Neolithic, possessing certain affinities to the Amri culture; above these comes a layer of burnt material indicating the violent destruction of the settlement, and immediately above this a phase of the Harappā culture which seems to be earlier than that illustrated by Harappā itself and by Mohenjo-daro but is entirely distinct from anything beneath the burnt layer, which marks a break in cultural continuity. The excavator concludes that the Harappā people were responsible for the destruction of the Kot Diji town and 'came into the Indus valley with a fairly well-developed culture from somewhere, as no traces of the origin of that culture have been revealed by excavations at any of the sites of the Indus valley'. On this evidence we are justified in



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assuming that the builders of the cities were newcomers from some other region.

Harappā and Mohenjo-daro are unlike the other Middle Eastern cities with which we have had to deal in that they are purely artificial creations. Whether or not they were walled is still uncertain, though the citadels at least were strongly walled for defence (Fig. 72). Within the limits of the city (Fig. 73) we find systematic town planning on the grid principle, fairly wide main streets running quite straight and intercepting each other at right-angles; these form large blocks composed of a number of houses, often large, which may be approached by narrow alleys. The houses are built with a lavish use of burnt brick and are provided with bathrooms, rubbish-shoots and a common drainage system; they are eminently town houses, designed for the amenities of life and owned by people of considerable comfort and means. In each case there is on the west side of the city a citadel, raised on an artificial brick platform and enclosed by immensely strong fortifications; these strongholds dominate the surrounding country 'like the fortresses of mediaeval barons'. In the town proper there are huge granaries such as might have been prepared to ration the citizens in the event of a siege, but more probably imply that there was maintained within the walls a sovereign's bodyguard holding the populace in subjection; and there are workmen's quarters—rows of identical hovels like slave-lines, and attached to them the platforms for the hand-querns in which the stored grain was ground.

In one respect the Indus civilization did carry on the tradition of the older Kulli culture, and that was in international trade. On various Mesopotamian sites there have been found the square stamp seals characteristic of Harappā bearing both designs of the Harappā type and inscriptions in the Indus script; these begin at least as early as the time of Sargon of Akkad (twenty-fourth century BC), and the latest recorded hitherto was in a Kassite grave at Ur which must date after 1700 BC and more probably comes nearer to 1500. We shall be guilty of no anachronism if we conclude from this that from the twenty-fourth century onwards Harappā traders had their Indian agents domiciled in the cities of Mesopotamia; there is an exact analogy in the *karum* of Ganes in central Anatolia, where the Akkadian merchants lived, and at Ur, where Harappā seals are most common, there was a *karum* which may have served the same purpose.

International trade on such a scale and over such distances requires good organization and implies high profits; we should *a priori* expect therefore to find in the Indus valley a business aristocracy playing an important part in the economy of the state, and the character of the town houses fully supports that assumption. The close resemblance between the two cities of Harappā and Mohenjo-daro makes it look very much as if they were the twin capitals of a single government (that would be not unreasonable in a country of such extent) and rivalry between them seems scarcely compatible with the smooth functioning of international trade. The elaborate fortification of

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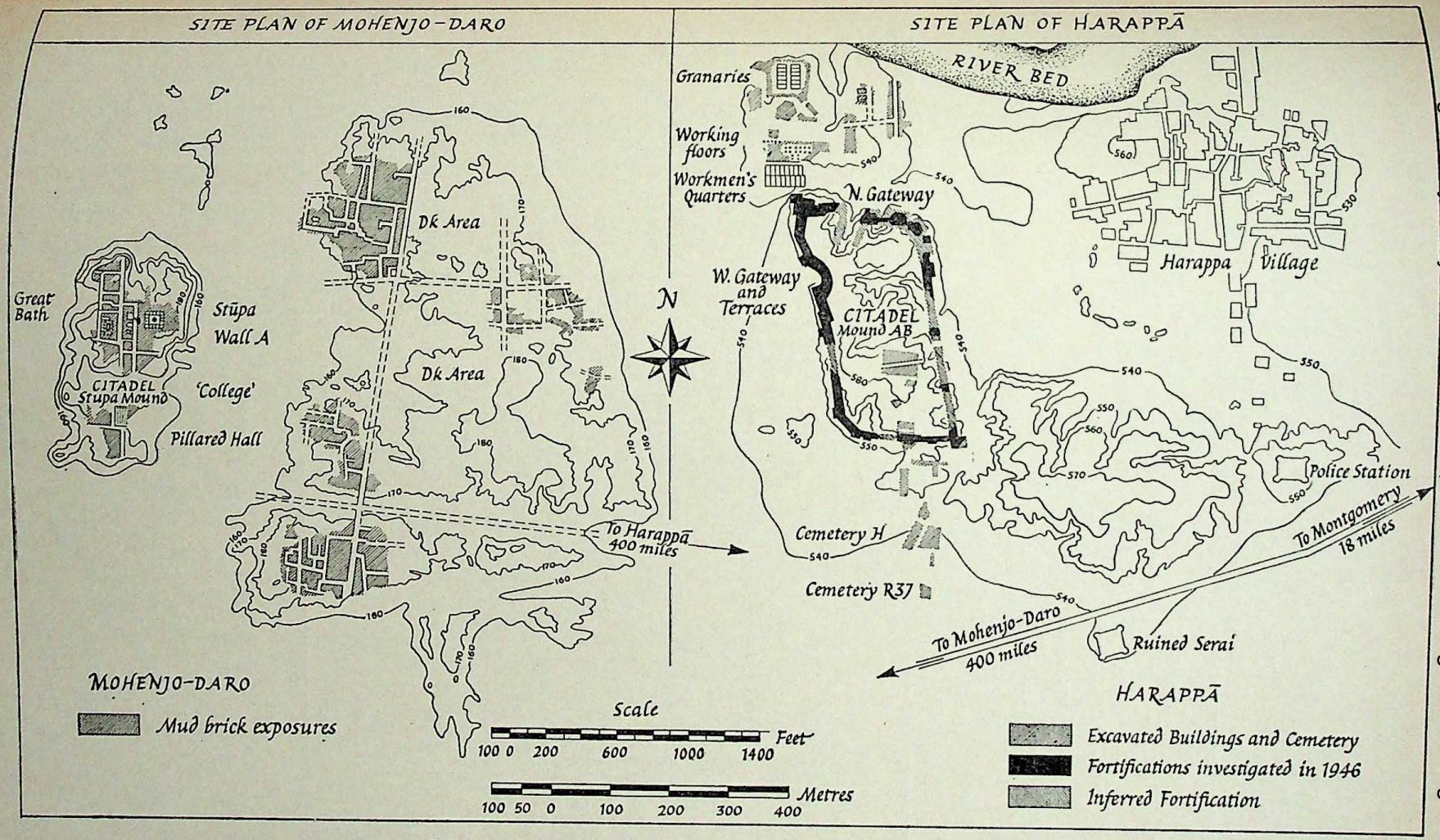


FIG. 72. Mohenjo-daro and Harappā: the general plans compared (after Wheeler).

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Mohenjo-daro: part of the town plan (after Mackay)

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the citadels would hardly have been necessary to protect the cities against raiding-parties from the mountains of Baluchistan; more probably they were intended to overawe the countryside, the assumption being that the ruler and citizens were of an alien stock[16] which had reduced the indigenous inhabitants to the status of serfs; certainly the citizens did live apart in a luxury of which even the country towns of the period show no sign at all, and perhaps they could only maintain their privileges by force.

The character of the buildings inside the citadel of Mohenjo-daro, so far as they are known (those of Harappā have been ruined beyond recognition) suggests not so much a dwelling-place or a temple as the setting for some sort of elaborate ritual which might be either royal or religious. Of the Harappā religion we know very little (*v.* Part II, Chapter VIII); that there was a king we may safely assume, but about him we know nothing at all. A close connection of some kind between royalty and religion is in early times almost inevitable; we have seen it in different forms in Egypt and in Mesopotamia, and probably it existed in the Indus valley also; but as yet there is nothing to show whether the ruler of Harappā was himself a priest, or a god, or simply a king under the direct protection of the gods. But under whatever pretext he held authority the conditions in which it was exercised were manifestly quite different from those of Mesopotamia or of Egypt. The city is here an artificial creation, not grown out of the soil, and the similar layout of the two capitals is evidence for an arbitrary and an absolute power; but the houses of the cities bespeak a wealthy aristocracy which must surely have been concerned with the business of government—a community of merchant princes such as surrounded the Doge of Venice—men of the same stock as their chief; and this close corporation ruled by force over a conquered populace, alien and enslaved. They ruled for at least seven hundred years and during that time made no appreciable advance of any sort. 'The dead hand of conservatism in design, rather than in technique, lies heavily on all the Harappā products. Complex technical processes were known, but the output suffered from standardization and an almost puritanical utilitarianism. Working within such narrow limits of traditional forms, fossilized over the centuries into a rigid, inescapable mental prison, the artist or craftsman could have found little outlet save in developing technical virtuosity. The pattern of Harappā civilization seems to have precluded great monuments such as temples, palaces, or tombs, wherein an outburst of artistic achievement could redound to the glory of the gods or the pride of a splendid spendthrift monarch. The secrecy of those blank brick walls, the unadorned architecture of even the citadel buildings, the monotonous regularity of the streets, the stifling weight of dead tradition all combine to make the Harappā civilization one of the least attractive phases of Oriental history.'[17] Professor Stuart Piggott's condemnation of the Harappā civilization quoted here is indeed justified by the material evidence which he cites; but the evidence is one-sided, and while the brick buildings which have survived can boast no beauty or grandeur

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a different tale is told by some at least of the sadly few objects found in them. No critic confronted with such a masterpiece as the bronze dancing-girl from Mohenjo-daro (p. 781) could refuse to credit the people of the Indus valley with an artistic genius which, faintly reflected in the seal engravings and the painted pottery, finds its full expression in their sculpture.

If the origin of this state is unknown and its history almost a blank, there can be no doubt about its end. Towards 1500 BC—the date, based on Indian literary sources, is supported by the evidence of the seal in the Kassite grave at Ur—the Aryans coming by way of Afghanistan invaded north-west India and after hard fighting overthrew 'the walled cities'; in the *Rigveda* Indra is 'the fort destroyer', he 'rends forts as age consumes a garment', and 'in kindled fire he burnt up all their weapons'. The Harappā civilization was not indeed altogether sterile, as we shall see hereafter, but its material glories vanished completely.

The Aryan conquerors were a simple, not to say a barbarous people, pastoral nomads for the most part, some perhaps petty farmers, who had not even a word for 'brick' in their vocabulary; they could destroy, but they could not rebuild. Just as the Saxon pirates who settled in Britain shunned the Roman sites whose walls of massive stone seemed to their ignorance to be the work of devils, and when they in due course began to build did so under the influence not of Rome but of the contemporary architecture of the Continent, so it was with the Aryans. Harappā and Mohenjo-daro were left to moulder into shapeless mounds. True, in the topmost levels are found shoddy huts built with re-used bricks above the ruins of the citadel, but the potsherds prove that such were inhabited not by the invaders but by a remnant of the old servile population who now squatted on the sites where their masters had lived. For more than a millennium after their arrival the history of the Aryans is shrouded in utter darkness;[18] when at last, late in the fourth century BC, the veil lifts a little to show us northern India under the Mauryan Dynasty possessed of a great urban civilization, those cities have nothing in common with the old Indus capitals. The burnt-brick-and-bitumen construction which was the most striking feature of Mohenjo-daro architecture is a long-forgotten art: in the earliest post-Harappā buildings of which we have any knowledge, those at Hastinapura, 80 miles north-east of Delhi, wood is the basic material, and the Mauryan palace at Pataliputra is also of timber. It would seem that when the Aryans began to build for themselves they made a fresh start; the monuments which they set up were certainly not inspired by any memories of Mohenjo-daro. At Hastinapura and at Pataliputra the remains are not sufficient to show the style of the buildings; but the earliest buildings in stone are obviously based upon timber originals, and when we look at such a structure as the north gateway of the Great Stupa at Sanchi it is difficult to avoid the feeling that the inspiration comes from the wooden architecture of China.[19]

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## CHINA

The astonishingly high Neolithic culture which we have seen spread over a large area of the Far East persisted, on the whole, long after the age of metal had succeeded that of stone in Mesopotamia and in Egypt, and when the change came it did not affect simultaneously all that area. How the change came about we have as yet no means of knowing, but at the earliest time for which material evidence is available, which is about the middle of the second millennium BC, it is complete; the Anyang graves prove that under the Shang Dynasty the technique of bronze casting had attained a perfection rarely equalled elsewhere, stone-carving and woodwork were fully developed and a system of writing had been evolved which was to endure, with relatively little change, until the present day.

This remarkable civilization, so far from being common to the whole of China, was confined to the northern provinces, its capital being in the rich loess plain on the north-west bank of the Huang Ho, some 200 miles south of Peiping. Protected on two sides by the river and on the west by a long mountain chain, the slopes of which provided heavy timber and wild animals for hunting whereas the level valley was ideal for the growing of grain and for pasturage, the region was admirably adapted to the development of a wealthy city state.

On the banks of the Huang Ho the Shang people built 'The Great City Shang', the capital city of an agricultural state. Through the flat loess plain the Yellow River winds in tortuous curves, its bed raised many feet above the general level of the earth, so that the tapping of its waters was easy enough and the difficulty lay rather in the need of drainage, which could only be accomplished by the digging of long canals. Every year, between July and September, the river comes down in spate, carrying with it a fantastic amount of silt—from 10 to 20 per cent of the total volume of flood water—and should it break its banks the results are disastrous indeed. Not only will the season's crops be lost, but the river is apt to change its course, finding a new bed at a lower level, and with that change the entire system of canalization is put out of action, and a fresh start must be made and new canals built to replace those now left high and dry. Chinese history is largely dominated by the struggle against the inundation floods; the struggle calls for highly co-ordinated effort and here, therefore, as in Sumer where the natural conditions were so similar, the centralized government of a city state is the necessary answer to the river's challenge. That the Neolithic barbarians whom the Shang people ousted when they took possession of the fertile province had failed to organize irrigation and flood-control is certain; they had lived from hand to mouth, profiting by a good season and starving when the river broke its banks and destroyed the harvest. The oldest examples of Chinese writing that we possess, the inscribed bones and tortoise-shells found in the Honan province, which belong to the Shang period, include numerous 'rain oracles' proving

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that in the second and third months of the year the Shang farmers were still anxiously enquiring about the prospects of the spring rainfall, i.e. irrigation had not yet gone so far as to make them independent of rain; on the other hand complex signs in the inscriptions such as 'flowing water—field' or 'water—rice' prove that irrigation was already practised. To expand the system and to maintain it required just that centralizing of government that the newcomers in fact introduced, and for this reason 'The Great City Shang' was built.

Presumably the Shang capital was a walled city, like that of Neolithic times which it replaced. The houses of the upper class, constructed of wood on raised platforms of beaten earth, were very different from the crude pit-dwellings of their predecessors, pit-dwellings which up to the end of the Shang period were still used by the lower classes, as well as by their nearest neighbours on the south-west, the Chou. On the long and rather narrow platform were set three parallel rows of posts supporting a gabled roof; the outer walls were merely screens, as in the modern Chinese house, which may have been of pounded earth (bricks had not been invented) or more simply of reed matting. The latter is the more probable in view of a (slightly later) text which says, 'in building a house, after all the toil of its walls, they have to plaster and thatch it', for in a riverine country (as in Mesopotamia) reed matting is the natural basis for mud plaster; but a description of the building of a royal palace (also written in a later period) does imply that in such a case the walls as well as the platform might be made of earth pounded between boards. Certainly this was the case with a building which may have been a royal palace attributed to the Chou period *c.* 1000 BC unearthed at a place called Abakan, on the river Verkhnaya Tunguska in the Khakass Autonomous Region. This had a very large central hall surrounded by smaller rooms and, on two sides, a further row of chambers, the hall a lofty building rising well above the surrounding rooms and these again higher than the outer chambers, so that there was a stepped roof-line; wooden columns supported the roof which was of terra-cotta tiles, some bearing Chinese inscriptions. Except for the tiles, this late structure (the earliest to give a complete plan known as yet) seems to perpetuate the style of the Shang structures and of those described in the Chou documents.

At Anyang the buildings excavated are all orientated to the north, and such uniformity may be taken to show that the city as a whole was laid out on a pre-arranged plan. No city walls were found, though their existence must be regarded as probable: traces of a wall have been found at the contemporary site Cheng-chou.

Regarding the form of government of the Shang people we have really no certain knowledge. The bone inscriptions help us very little, and the literary texts which purport to be contemporary are in fact of later date and, if not actual forgeries, are propaganda put out by the Chou rulers, tendentious at the best and in some cases deliberately misleading. There was a king of Shang,

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and the kingship was hereditary, the founder of the dynasty having been chosen by Heaven as the most worthy to bear rule. According to later tradition he was emperor of China, which assuredly was not the case. His dominions were strictly limited, wars with neighbours were of common occurrence and the constant fear of raids, to which the requests for omens bear witness, implies that the state was none too secure; but there is no doubt that conquest did extend his dominions over a number of alien tribes, for T'ang himself is said to have 'smitten the princes of Wei and Ku and dealt with the prince of K'un Wu', and Chou had to submit to a later king of his line. But the manner in which the kingdom was organized is doubtful. The Chous governed through a feudal system[20] and Chou writers represent the Shang system also as feudal—indeed, tradition says the same about ancient Hsia; but Creel and many other modern scholars reject both statements. They point out that in the early Chou period the titles of the feudal lords of varying rank had not been arranged in the graded hierarchy found in later times but are used rather indiscriminately, which they take to show that the feudal system 'had been created *de novo* out of the situation resulting from the Chou conquest'. The attribution of that system to the Shang régime would be part of a campaign of propaganda meant to legitimize the conquest; although the Chou writers admit that their rulers had once been vassals of the Shang house yet they give them the royal title, *wang*, which would seem to imply independent kingship; and the book *Shang Sung*, describing the Shang state, says,

> Heaven appointed the many rulers
> and established their capitals within the sphere of the labours of Yü,
> But for the business of every year they appeared before our king
> Saying 'Do not punish or reprove us;
> We have not been remiss with our husbandry',

from which it is clear that these 'many rulers' were not feudal lords enfeoffed by the sovereign but real kings, heaven-appointed as was the emperor himself, who had been forced by defeat in war to give tribute and make a yearly accounting to the conqueror.

On the other hand the situation after the Chou conquest—the wide extent of the dominions to be governed, the difficulty of communications and the undeveloped state of finance—was precisely the same as that before the conquest, and is likely to have been dealt with on the same lines, which the Chou writers claim to have been the case. Granted that in early Chou times the feudal titles were not exactly fixed, so that a man succeeding to his father's fief is called by a different title, it must be remembered that by the terms of European feudalism fiefs were not properly hereditary and might be renewed upon challenged conditions: 'The foundation of the feudal relationship proper was the fief, which was usually land. In return for the fief, the man became the vassal of his lord. The faithful performance of all the duties he had assumed in homage constituted the vassal's right and title to his fief.'



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Now in the quotation from the book *Shang Sung* cited above we seem to have just that annual renewal of the act of homage with its assurance of duties performed which mediaeval feudalism theoretically required, and the ruler's insistence on their husbandry is likely to be not a metaphor but a literal reference to their landed fiefs; one of the three main principles of feudalism was 'that every holder of land is a tenant and not an owner', and he would naturally have to give an account of his stewardship. At the same time, the description of the rulers as 'appointed by Heaven' does imply royalty, and it is quite certain that the chiefs of the vassal state of Chou were hereditary rulers who could claim the title of king. The anomaly can most reasonably be explained by assuming that T'ang, when he first achieved sovereignty, organized his domains on feudal lines, making grants of land to his followers; when later wars of aggression resulted in the acquisition of fresh territories then, if resistance had been unduly stubborn, the same policy would be enforced, but where a state surrendered with more or less good grace its native ruler would be confirmed in power as a vassal, on much the same terms as a Shang feudal lord but with a cloak of royalty which might help to reconcile his people to the Shang yoke. Such an inconsistency would present no more difficulty to the Chinese than it did to the mediaeval European, whose feudalism was also based on two disparate traditional practices. Of this it had been said, 'Feudalism in its most flourishing age was anything but systematic. Great diversity prevailed everywhere. But underlying all the confusion of fact and practice were certain fundamental principles and relationships which were everywhere alike. The chief of these are: the relation of vassal and lord; the principle that every holder of land is a tenant and not an owner; the principle that the tenure is one of honourable service.'

In so far as feudalism can be defined, the definition seems to apply to what we can learn about the Shang régime. It is certainly tempting to assume that the Chou disclaimer of any originality regarding the organization of government was an honest one, and that it was not those barbarians but the highly civilized Shang people who not only developed Chinese art and writing but also laid the foundations of the system whereby China was to be governed for nearly thirty centuries.

It is a tempting assumption,[21] but unproven; as has been said above, it is rejected by many scholars. If the question has been argued here at some length it is to show how dangerous it may be to deduce from purely archaeological material the details of state organization, social conditions and the like. Some at least of the attempts made in this direction appear to be unduly subjective. Thus the theory, confidently put forward, that in the Yin period family and clan relations predominated to the exclusion of territorial and administrative relations, i.e. central government, does not necessarily follow from the archaeological evidence—which indeed might be used to support the opposite conclusion. The organization of labour required for irrigation works seems hardly consistent with a clan system, and the king's anxious

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enquiries about the weather might imply that the government as such was directly concerned with the task; the encircling of cities with walls of stamped earth might be held to result from a central authority having the power to impose the *corvée*; and the wealth of some of the Anyang tombs might be thought incompatible with communal ownership. Actually Yin civilization had reached so high a level, undoubtedly after many generations of development, that a merely clan basis of society seems improbable; that primitive stage should have been outgrown long before.

What we can say with certainty is that there was a king, with vassal rulers under him; that there were rich people and poor people and, undoubtedly, slaves, if no others then at least the Ch'iang, foreign prisoners of war who were doomed to be sacrificed to the gods or the ancestors or at the obsequies of kings, but pending that doom would be made to labour for their captors. Society was organized on an urban basis, and while the bulk of the working class would be agriculturalists the differentiation of employment had gone very far, so that not only was the bronze-caster, for instance, a professional, but he might even devote himself to one particular branch of his craft, a whole workshop specializing in vessels of a certain type.

Surrounded as it was by backward peoples (the tribes to the east are regularly described as 'barbarians' and the Chou on the south-west had even in the fourteenth century BC scarcely advanced beyond the Neolithic stage) the Shang kingdom must have maintained its position largely in virtue of its superior armament; its wealth in metal made it formidable. The soldiers wore bronze helmets and perhaps bronze body-armour also; they carried bronze-headed 'dagger-axes' and powerful bows; together with the infantry there was a force of chariots, each bronze-fitted car drawn by two, or later by four, horses. The chariotry was the *corps d'élite* and the decisive weapon in warfare, so much so that the strength of a state was reckoned by the number of chariots it could put into the field—'a state of a hundred chariots' or 'of a thousand chariots'; and since the cost of a chariot and of its upkeep must have been considerable we may assume that service in the branch was part of the duties accepted by the great fief-holders, who would equip themselves at their own expense. As in the case of the Sumerians, so too the Shang kingdom was enabled by the possession of a well-organized military force not only to add to its territories but to spread the knowledge of its superior civilization. Thus the Chou, who after much fighting were reduced to vassalage (their rulers being left in power and intermarrying with the Shang royal family) remained as a nation barbarous enough, but the Chou aristocracy learned so far to appreciate the arts of Shang that when in the twelfth century BC they, in alliance with other tribes of western China, overthrew the Shang dynasty, their mastery made surprisingly little difference to the country's culture. In the works of art of their time we can remark a certain loss of quality, which is but natural when the craftsmen's clients were not sufficiently educated to demand nothing but the best (though prior to the discovery of the Anyang

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tombs the Chou bronzes were considered by experts to be the finest ever made in China), but apart from this slight set-back the new régime carried on faithfully the traditions of the old. By the time the Shang Dynasty collapsed the foundations of Chinese civilization had been well and truly laid.

## NOTES TO CHAPTER II

1. The railway line running by the ruins of Ur is 6 feet below the bottom of the bed of the Euphrates at Nasiriyeh, 10 miles away.
2. Professor I. M. Diakonoff points out that in 'civilized society those who are rich and powerful have opportunities for education; thus the intellectual ascendency of the upper class is the result of class differentiation inside the society. A system of government does not result simply from a sharper differentiation of professions but rather from the fact that no one would drudge in order to let another man have the privilege of intellectual life unless forced to do so. A system of government is indispensable to the ruling class.'
3. Compare the Jericho defences, where the house of Rahab the harlot was 'upon the town wall, and she dwelt upon the wall' (Joshua ii. 15).
4. Professor H. Frankfort was writing before the discovery of the Calah inscription, and he admitted that his arguments could not apply to Ur, of the extent of which he was unaware.
5. See pp. 814–15.
6. Professor John A. Wilson regards this point of view with some reserve. While generally true, it does not reflect the imperialist spirit of the Pharaohs of the New Empire, from the Eighteenth to the Twentieth Dynasties.
7. Professor I. M. Diakonoff observes that prior to the Third Dynasty the *ensis* did not necessarily hold their office from the kings. At the time of the Third Dynasty, the office was, however, no longer hereditary. The possibility exists that earlier conditions might have continued to prevail on the outskirts of the kingdom.
8. The nature of royal power may have evolved in Assyria over the centuries. According to Professor I. M. Diakonoff the Assyrian rulers were not autocratic before Samsi-Adad I, and were probably not autocratic after Samsi-Adad I until the times of Assur-Uballit I.
9. Professor W. Andrae prefers the appellation 'Hurri'.
10. The pre-Sargonid temple of Ishtar is strikingly like the Ishtar temple at Assur.
11. Professor I. M. Diakonoff suggests that the early settlers were fishing folk and that the sea-trade came later. He points out that the name Sidon means 'fishing place'.
12. Prior to Hattusas, the capital was Nesa, farther to the south in the region of the Salt Lake.
13. Professor E. Laroche points out that no hieroglyphic writing has been found at Beycesultan and that the date of 2000 BC must remain hypothetical.
14. This passage and that on p. 402 refer to the same monument and both show some discrepancy in the opinion of Professor J. M. Casal who adds: 'As a matter of fact the pottery associated with the Palace displays affinities not with the "Uruk Ware" of Mesopotamia, but with the Second Style of Susa as well as with the Kulli ceramic. This rectification, however, does not conflict with the concluding statement that Mundigak "might well be a 'half-way house' for transcontinental trade". This is precisely the conclusion I reached in the final report mentioned in note 49 of Part II, Chapter I based on evidence supplied by the numerous levels of the site throughout its long occupation.'
15. Professor Diakonoff insists on the conjectural nature of this hypothesis which remains open to controversy.

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16. Professor I. M. Diakonoff and Professor G. F. Ilyin note that no conclusive proof exists that the ruling class was of foreign origin. The citadels may have been similar to the baronial castles of Germany in the Middle Ages. Furthermore, Professor Ilyin claims that the data which lead Sir Leonard Woolley to this conclusion are unclear. Sir Leonard Woolley, basing himself on the evidence, draws the attention (1) to the appearance of a new culture and (2) to the violent destruction of the old culture.

17. See Stuart Piggott, *Prehistoric India* (Penguin ed., 1950), pp. 200–1.

18. A scholar, on behalf of the National Commission of India, draws attention to excavations particularly at Hastinapura, which have thrown light on this period. See B. B. Lal, 'Excavations at Hastinapura and other Explorations in the Upper Ganga and Sutlej Basins, 1950–1952', in *Ancient India*, Nos. 10 and 11 (1954–55), pp. 5–152.

Sir Leonard Woolley, however, considers that these throw light on the archaeology, but not on the history; it is not even agreed whether the Painted Grey Ware represents the Aryans or not. (For fuller discussion, see *supra*, p. 411, n. 37). A. Ghosh in his official summary of the same article says, 'Only a fringe of the problem has been touched. The gulf of the Dark Age has been narrowed down but not filled.'

19. After thorough examination of the monuments in question, Sir Leonard Woolley maintained his point of view, in spite of a number of objections put forward by Professor Ilyis and others, noting that 'as regards Chinese connections, it is an impression, and there in no proof; but the impression is worth recording.'

20. Sir Leonard Woolley justified his use of this term in the following note:

It has been pointed out to me that my use of the word 'feudalism' here and elsewhere in my history is likely to lead to misapprehension in that scholars of the Marxist school of thought employ it in a very different sense. In Marxist terminology 'feudalism' is a socio-economic structure of society which is characterized by the ruling (*feudal*) class living on the produce of peasants (and also artisans) personally dependent on members of the ruling class or on this class collectively (as, for instance, on monasteries, on the feudal state as a whole); the property of the ruling class in land being combined with tenure of land allotments by the peasants; the population being divided into hereditary estates with different civil and property rights.

The above definition departs very widely from that which I give in my text. The latter agrees with that in Taswell-Langmead, *English Constitutional History* (5th edition, London, 1896)—'The two chief elements of feudalism are: (1) the personal relation of lord and vassal founded on contract and binding the parties to mutual fidelity, the one owing protection, the other service; (2) the holding of the usufruct (*dominum utile*) of land on the condition of rendering of military service, the ultimate property (*dominum directum*) remaining in the lord, the granter. Combined, these two elements constitute feudalism; apart, neither is sufficient.'

It is true that the fiefs, originally tenable for life only, soon came to be hereditary, at least on the continent of Europe, where too with the possession of a fief was united the right of local judicature, and the practice of sub-infeudation gave to the great fief-owners a practically independent military and civil jurisdiction—an abuse which in England was forestalled by the *Gemot* of 1086, held on Salisbury Plain, when the Witan and the substantial landowners to the number of sixty thousand swore allegiance directly to the king as supreme feudal overlord; but, none the less, the essence of feudalism is that contained in the definition. For most readers my use of the term will seem understandable and justified; employed in the Marxist sense it certainly will not apply, but I trust that this explanation will prevent misunderstanding by a Marxist reader.

21. See Liu Tse, 'The Nature of the Western Chou Society', in *Sun-Yat University Bulletin*, No. 1 (Canton, 1957), p. 195.

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CHAPTER III

# THE SOCIAL STRUCTURE

## SPECIALIZATION OF OCCUPATIONS AND PROFESSIONS

In the last chapter an attempt was made to sketch the process of urbanization in the different countries whereof we have record, the development of village into town and of town into city. Side by side with that material growth, partly resulting from it and partly responsible for it, there comes a change in the manner of men's lives; what had been but an agglomeration of clans or families each more or less self-sufficing and morally and socially independent coalesces into an organized society wherein each citizen has his specialized role and must play his part as a member of a community, profiting by the co-operation of his fellows and bound with them by a common law.[1]

Primitive man, living in relative isolation and fending for himself, had necessarily been a Jack-of-all-trades. When he joined with others to make a village he discovered the need to collaborate and to compete with them, and it was to the general interest and his own that he should concentrate on the kind of work that he could do best. Specialization of this sort must have started very early and by degrees, but with the introduction of metal it became essential, for metal-working is a skilled job requiring a long apprenticeship, and it is an all-time job; indeed, as the growing population of the city assured a regular consumers' market for manufacture of all kinds, the various trades became ever more exclusive in their demands on the workers' time. It is true that agriculture remained the most important factor in the economy of the state, so much so that most, even of the city-dwellers, would have their own vegetable gardens or paddocks large enough to supply fodder for a few animals, but very often the care of the garden would be entrusted to hired labour or to a tenant who shared in its produce; the ordinary citizen was a craftsman, a smith, a potter, a carpenter, or shopkeeper, and, as the scope of business increased, a merchant. In most of the countries there was no standing army; war meant the raising of a citizen levy, and that would be only after the gathering of the harvest, in 'the season when kings go forth to war', so that in the early days at least soldiering was not a profession; but even then there was need of a *cadre* of regular officers, and the king would have his personal bodyguard about him, with the result that a military class did exist and was to become more important as imperialistic policies developed. In a theocratic state the priesthood was bound to figure largely. The head of each household would continue to conduct the services and the sacrifices of his domestic gods, but the ritual of state worship was the business of the government. The king might be himself the god, or he might represent the god, or

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he might be the High Priest, but in any of these functions he would necessarily be surrounded by a regular order of ministers, and where the distinction between religious and lay authority did not really exist but religion gave its sanction to the civil power, there the civil service, if not actually identical with the priesthood, was bound to be recruited mainly from the ranks of the clergy. With the introduction of the art of writing a new feature was added to the social aspect. It must be remembered that writing was a temple invention[2] and therefore first practised by the priests. It had to be taught, and the priests were perforce the teachers, but as the advantages of writing were realized others than professional priests would join the temple schools; a certain number of business men would acquire the new learning, but most of them, too busy to learn for themselves, would be ready to utilize the services of professional writers, and to meet their need there arose a regular class of scribes, public notaries and letter-writers, whose literary attainments would further recommend them for the minor posts of government.

It is clear that while such different occupations imply a vertical division of the citizens the categories so formed would not be all on the same social level; there was a horizontal division also. Officers of the army and the chief priests of the temples would by their functions be brought into closer relations with the king and so by reputation as well as by authority would rank above the common herd. The scribe, even if he were not in government employ, had the intellectual arrogance of the better-educated man and his contempt for the manual labourer. There is an amusing illustration of this in the *Teaching of Khety, Son of Duauf*, an Egyptian work perhaps dating as early as the Eleventh Dynasty but current in much later times, in which a father taking his son to school exhorts him to industry by passing in review all the other occupations and trades and showing how ill they compare with the blessings of the scribe's calling: 'I have never seen the smith as an ambassador, but I have seen the smith at his work at the mouth of his furnace, his fingers like the crocodile's, and he stank more than fishes' eggs. . . . The stonemason finds his work in every kind of hard stone. When he has finished his labours his arms are worn out, and he sleeps all doubled up until sunrise. His knees and his spine are broken. . . . The barber shaves from morning till night; he never sits down except to meals. He hurries from house to house looking for business. He wears out his arms to fill his stomach, like bees eating their own honey. . . . The farmer wears the same clothes for all times. His voice is as raucous as a crow's. His fingers are always busy, his arms are dried up by the wind. He takes his rest—when he does get any rest—in the mud. If he's in good health he shares good health with the beasts; if he is ill his bed is the bare earth in the middle of his beasts. Scarcely does he get home at night when off he has to start again.' Therefore, 'Apply your heart to learning. In truth there is nothing that can compare with it. If you have profited by a single day at school it is a gain for eternity.' As another and later text, the *Teaching of Amen-em-ope*, puts it, 'A scribe who is skilful in his business findeth himself worthy to be a

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courtier', which the Hebrew author of Proverbs in his admonitions to the young scholar paraphrases, 'Seest thou a man diligent in his business? he shall stand before kings'. (Prov. xxii. 29.)

This stratification of society obviously has its beginnings in the simplest form of communal life. As soon as there was any specialization of functions one type of work would claim superiority over another: the skilled craftsman not only looked down upon the mere labourer but because his skill could earn more in a shorter time did in fact enjoy more leisure and a better life. A tremendous impetus, however, was given to this social change by urbanization, which brought in the further distinction that the 'upper' classes were congregated in the towns whereas the bulk of the 'lower' classes, including all workers on the land, remained in the cultural outer darkness of rural existence;[3] at the same time it introduced the further cross-division between the brain worker and the manual worker. In any urban culture there will be found a ruling class—which may be very small—and under it a society comprising a middle class distinguished by profession, by technique or by wealth, and a lower or labouring class; but whether these *de facto* grades are confirmed by a differing political status is another matter; actually their character and standing will be found to vary from country to country and to depend upon local conditions and history.

*Class Distinctions in Egypt*

In Egypt, under the early dynasties, only two classes can be recognized, the government and the governed. Pharaoh as god was a being apart, incomparably superior to any mortal; but Pharaoh as ruler had to have associated with him officials to whom could be entrusted the executive functions of rule. The unification of the country had been effected by war; the old governors of the northern nomes, therefore, had been replaced by Pharaoh's nominees who, as his representatives in the provinces, kept their own almost independent courts and had their forces of armed retainers held at the disposition of the supreme ruler; these 'nomarchs', together with the great functionaries of the royal court, the members of the royal family (for the sons of the Pharaoh took a prominent part in affairs) and perhaps also the officers of the royal bodyguard, 'the followers of His Majesty', formed the aristocracy of the Old Kingdom. Even as late as the Middle Kingdom the priesthood was still merely an incidental office held by a layman; the lower orders of officials, a few artists, highly skilled craftsmen and merchants might claim a superior status to that of the artisan or the agricultural labourer, but in reality all alike were indiscriminately Pharaoh's serfs.

This simple division of the nation into two main classes, the officials who administered Pharaoh's orders and the rest, mere cyphers, who obeyed them, held good only for the early phases of Egyptian history. The old nomarchs, the viceroys of Pharaoh in the various provinces of the kingdom, profiting by the tendency to make the office an hereditary one, established themselves as

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semi-independent rulers owing no more than a feudal allegiance to their sovereign and ready, if the opportunity offered itself, to rebel against him. In the civil wars that actually resulted their strength was largely exhausted, and after the expulsion of the Hyksos the Pharaoh Ahmose made a clean sweep of nearly all such as remained and confiscated their landed estates. The whole of Egypt thus became the personal property of the Pharaoh, and in place of the feudal lords the king's favourite nobles, his relatives and his partisans, administered the country in close dependence on the imperial officers who formed his cabinet. The continuous wars that had secured freedom from the Hyksos invaders and then were necessary to assure the frontiers in the south and in Syria had led to the formation of a standing army. Pharaoh was now not only a ruling god, he was also commander-in-chief, and his sons were generals in the forces. The rich booty that had been brought back from the Syrian cities encouraged the recruit and the chances of promotion open to the professional soldier and the prestige attaching to the newly introduced chariotry attracted the scions of the nobility who more or less monopolized this branch, providing their own equipment, and so adding greatly to the importance of the aristocracy. The army now becomes the dominant force and the chief motive power in the state, and its members could not but be recognized as belonging to a social rank superior to that of the mere labourer.

Side by side with the soldier there appeared another applicant for social distinction. The favour shown by the Pharaohs of the Middle Kingdom to the temples of the gods of Egypt was continued in the Eighteenth Dynasty, but now on a far greater scale. Of the wealth that poured into the country as a result of the sacking of foreign cities and the tribute paid by foreign kings, a large part was set aside as thankofferings to the gods who led the armies to victory, and in particular to Amon of Thebes. The administration of the temple revenues and the management of the temple estates demanded a staff whose numbers ever increased. The priesthood became a profession. The priests and officials attached to the local temples were now united in a single sacerdotal organization embracing the whole land with the High Priest of Amon of Thebes as its supreme head;[4] and the political power of that organization grew until it could in the end control and even supplant the divine Pharaoh himself.

A census official of the Eighteenth Dynasty divided the people of Egypt into 'soldiers, priests, royal serfs and all the craftsmen'. Naturally he omits from his classification those with whom he had no professional concern, namely, at the top of the scale, the royal family and court circle which formed the nobility, and, at the bottom, the slaves; he deals with what can be termed the middle and the lower classes of society, freemen and serfs. The character and the condition of the two classes need further examination.

Originally the Egyptian army had been a citizen force, a *levée en masse* called up by the Pharaoh for service as and when required. Since the vast

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bulk of the population were farmers, the call-up could be made only after harvest, for at any other season it would disorganize the entire economy of the country. After the establishment of the Eighteenth Dynasty Egypt's imperial commitments made a standing army essential, as we have already noted, but this, although it included large detachments of Nubian and Asiatic troops and (later) of mercenaries like the Sherden, had to be kept up to strength by regular recruitment in Egypt itself. The men thus enlisted were drawn from the freeman class, the so-called 'citizens of the army'; the census official's term 'soldiers' includes therefore all freemen other than priests because their liability to military service was indeed their qualification for freedom and had become the significant designation of their class. For very many of the 'citizens of the army' military service must have remained no more than a liability; they were never actually conscripted. There were small landowners whose civilian activities were of value to the state, some merchants (though the major lines of trade were run by the government), scribes, artists and petty functionaries of the crown; they could live their own lives undisturbed, and there was always the chance of promotion and royal favour; one such official can even boast of his humble origin: 'Ye shall talk of it, one to another, and the old men shall teach it to the youth. I was one whose family was poor and whose town was small, but the Lord of Two Lands recognized me; I was accounted great in his heart, the King in the splendour of his palace saw me. He exalted me more than the courtiers, introducing me among the princes of the palace.' Not all could rise so high, but at least there was scope for ambition here, as there was in the army and in the priesthood, and for all a comfortable manner of life. The growing prosperity of the middle class is reflected in the cemeteries. In the time of the Old Kingdom it had been the case that while the mastaba tombs of the court nobles, clustered round the pyramid prepared for Pharaoh, supplied them with the essentials for a happy life in the hereafter, the rest of the people had no such hope; their bodies were interred in nameless graves with, at most, some sustenance for the journey to that world in which their serfdom would be for eternity. To a certain extent that is true of the Middle Kingdom also, but a change was in progress and in the course of time became absolute.

During and after the Eighteenth Dynasty the middle class provided for themselves tombs and tomb-offerings and even tomb-chapels, things to which their forebears had never aspired; in the vast cemetery at Abydus about a quarter of the graves are those of priests; at el Amarna the nobles had their chambered tombs hewn in the hill-sides, but, apart from them, in the valley the gay little funerary chapels commemorate minor functionaries sprung from the lower ranks of society. It was no longer for the middle class a case of *nos numeri sumus*; the Egyptian freeman had risen to be an individual; he had a stake in the country, and if the future life was to perpetuate the conditions of the present it was a fair prospect than which he could ask nothing better. This bourgeois development is further illustrated by the houses of the living. In

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the Twelfth Dynasty town of Kahun there are the houses of the petty clerks and of the artisans, containing each from four to seven rooms, small, crowded and aligned in monotonous rows, and there are about a dozen great mansions of the nobility, each of about sixty rooms with large columned courts; and between these there is nothing, nothing to bridge the gulf between abject poverty and the extravagance of wealth. But in the Eighteenth Dynasty town of el Amarna we find far more variety. The royal palace and the mansions of the court nobility are on the scale of magnificence seen earlier at Kahun, but side by side with those, occupying, for example, a large part of the north suburb, we find the comfortable homes of the middle class. These houses are all detached, each standing in its own walled courtyard measuring as much as 70 yards by 50 yards (*c.* 65 metres by 41 metres) laid out as a garden with formal rows of shrubs and trees amongst which generally would be a tiny chapel for family worship. Each house contained a dozen or more rooms, including a columned central hall and one- or two-columned loggias opening on the garden; it was of a single storey but a staircase led up to the flat roof on which there might be a light loggia or sun-shelter; all this was for the use of the family and their guests, the kitchen and the servants' quarters being outside in the courtyard, to leeward of the main building. On a smaller scale and in a simpler form the dwelling of the bourgeois citizen reproduced that of the hereditary noble.

Along the narrow lanes behind these houses lie the 'slums'. Here the buildings are crowded together, ill built and irregularly planned, but by no means stereotyped; often the remains suffice to show that the poor owner was really making the best of the site and the means at his disposal, and the result has at least a certain individuality. Here lived the artisans and the lesser craftsmen and mechanics, men who were by law strictly forbidden to change their occupation and were not allowed to meddle in civic affairs. The most depressing evidence of their social standing is given by the walled village lying a mile or more to the east of the city of Akhetaton which was built for the labourers employed on excavating the rock tombs of the nobility; the monotonous rows of identical hovels laid out with mathematical precision look more like slave-lines than the homes of even the humblest citizens of imperial Egypt. Such 'artisans' ranked in the census list together with the agricultural labourer as forming the lowest order of society. Not all agriculturalists were included in this category; the 'small men', as they were called in Middle Kingdom times, small property-owning cultivators, were heavily taxed but at least their own masters; but the men who worked on the royal estates and on the temple lands or were employed by the holders of military fiefs were really serfs. They were not slaves, in that they could not be sold, and they had their own homes; but they were tied to the land and, if the land changed its ownership, passed automatically from the service of one master to that of the other, and they could be hired out for their master's profit; as citizens they had their legal rights, but they were always subject to the

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oppression of those of higher rank. They were exempt from military service, which would have raised them to a higher social status, for the simple reason that the fields had to be tilled; but when the Nile was in flood and also after the harvest had been gathered, in the agricultural 'dead seasons', they would be liable to the *corvée*, the strengthening of dykes, the cleaning and deepening of canals, and the porterage of stone for Pharoah's huge building works. This predial serfdom therefore aimed at providing for the agricultural and religious requirements of the state, and normally it did so effectively and without over-great hardship. For a community to make use of some of its manpower for its own welfare is not even today considered necessarily to entail a form of slavery which reduces the individual to the status of a chattel.

*Slavery in Egypt*

These classes accounted for the whole Egyptian population of the Nile valley. In addition, there were slaves, but they were foreigners, prisoners-of-war, and from the point of view of Egyptian economy they count for curiously little. The number of slaves in private hands seems never to have been large; thus Ahmose, an army officer in the early days of the Eighteenth Dynasty, was given by Pharaoh four Hyksos prisoners—one man and three women—whom he had captured with his own hand, but the fact was sufficiently unusual for him to put it on record in his tomb. Owing to the unwarlike nature of the Egyptian peasant it has always been the custom to enrol foreign recruits and suitable prisoners-of-war in the Egyptian forces, firstly Sudanese—as is pictured in the wooden tomb-groups of the Twelfth Dynasty (Pl. 17, a)—but also Libyans and, when their turn came, Syrians;[5] only when the Syrian wars produced prisoners in greater numbers than the army required were they used for other purposes, and even then only within definite limits. Thutmose III brought back from his victorious campaigns captives destined to work as weavers, cooks, tailors, etc., in the palace and as agricultural labourers on the temple estates; these were lodged in *ergastula* and were therefore real slaves, but they were the slaves of the gods—of Amun-Rê and of the Pharaoh—who alone were the victors; they could not be, or were not, handed over to private persons. Amenhotep II and Amenhotep III each claim nearly a hundred thousand prisoners-of-war, as again does Ramses III, whose Syrian prisoners were set to till the temple estates and were kept in regular slave-lines. But very soon those 'slaves' were registered as tax-paying serfs; the Pharaoh distributed some of them amongst his courtiers, and they intermarried with their Egyptian fellow-servants; he employed great numbers of them on the building of his huge monuments, but later he enlisted them, branded with his name, in the ranks of the Egyptian army. As the growing power of the priesthood of Amun began to undermine the autocracy of the Pharaoh he found it expedient to surround his person with foreigners who owed allegiance to none but himself, and such guards and attendants, although slaves by origin, gained high office in the court and in the state. The fact is

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that whereas in most countries of the Middle East the institution of slavery has been a necessary condition of the development of civilization, Egypt, where all labour was at Pharaoh's service, was an exception to the general rule; historically and economically the constitution and the character of the country did not favour a large-scale development of the slave system. The Nile valley was thickly populated and the law ensured that there should be no shortage of labour for agriculture and for the essential trades, and the *corvée* system was so organized that the most elaborate public works could be carried through without detriment to the cultivation of the soil; the upper class, enriched by the favour of a divine king who owned the entire land and its immense wealth, had the leisure and the means to appreciate and to encourage the arts of civilized life. Egypt was in fact self-sufficient, and when by accidents of war slavery was introduced it was an excrescence upon the body politic.

*Slavery in Mesopotamia and Anatolia*

The case was very different in Mesopotamia and in Anatolia. There you had states not physically isolated as was Egypt but amongst neighbours with whom they might at any moment be involved in war. From the very beginning, therefore, any successful state was likely to have on its hands prisoners-of-war who would naturally be made to work for their conquerors. In theory, the enemies who have dared to attack or resist your state deserve death, and when you meet them in battle you kill them. If they surrender, and you decide to spare their lives, it is only because they can be more useful alive than dead; they become your slaves, but if as slaves they cease to be useful you can kill them without compunction. That the Hittite law recognized this absolute right is clear from an exhortation in which the relation between master and slave is used to illustrate that between man and god: 'And if ever a servant vexes his master, either they kill him or they injure his nose, his eyes or his ears; or he [the master] calls him to account and also his wife, his sons, his brother, his sister, his relatives by marriage, and his family, whether it be a male servant or a female servant. . . . If then anyone vexes the feelings of a god, does the god punish him alone for it? Does he not punish his wife, his children, his descendants, his family, his slaves male and female, his cattle, his sheep and his harvest for it, and remove him utterly?' Also: 'If a servant is in any way at fault and confesses his fault before his master, then whatever his master wants to do with him he will do'—again the master is assumed to have unlimited right, including the power of life and death, to deal with the slave as he thinks fit; but the text goes on—'But because he has confessed his fault before his master, his master's spirit is soothed and the master will not call that servant to account'. The Hittite slave was a mere chattel which could be bought and sold, and his offences involved death for himself and all belonging to him; the writer of the exhortation insists on this as being an exact parallel to man's position when he sins against god, who will punish 'to the third and fourth generation'; but he insists equally that man can by

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confession obtain the mercy of god just as he himself forgives the trespasses of his slave. The implication is that the individual master's treatment of his slave would in practice be mitigated by common sense and by morality, but apart from that rather precarious safeguard it suggests no real alleviation of the slave's lot; it is therefore surprising to find that the Hittite code of law conferred upon the slave rights which are wholly inconsistent with what is normally termed slavery. By definition, a slave is a human chattel, the absolute property of his master, possessing no individual rights and enjoying no legal protection; the law is concerned with him only to the extent that it enforces his complete subjection to his owner. But in the Hittite economy this is not so. A slave could own property; he could marry, and, provided that he produced the necessary bridal gifts, could marry a freewoman; if he was assaulted and injured (presumably by someone other than his master) he could sue his opponent in the courts and receive money compensation (exactly half of what would have been paid to a freeman) and the money went to him, not to his master;[6] if he were the guilty party he was fined exactly half the amount imposed on a freeman for the same offence, except for one or two crimes for which the punishment was bodily mutilation. In the eyes of the law therefore the 'slave', so far from being a chattel, was a person, one whose life and bodily integrity and civil rights had to be protected; and if his value to the state was assessed at only half that of the free citizen his obligations to it were halved likewise.

A somewhat similar anomaly can be observed in Mesopotamia where again the slave is on the one hand no 'man' but a thing, shaven-headed and branded, whose father's name is never recorded because he is less than human, but on the other hand is a person enjoying rights of his own and a measure of protection from the state. But here the master does not even in theory possess the power of life and death over his slave; ownership was absolute as far as it went, but it had its limits. The Sumerian and the Babylonian law recognized and encouraged slavery as an institution, but the slaves formed part of the social state, a distinctly valuable part, and therefore could not be left entirely to the mercy of the individual citizen-owner; moreover, the status of the slave was accidental and not necessarily permanent: so far from a man being a natural slave, the slave was potentially a freeman. The institution had to be enforced. For a slave to run away was, theoretically, a capital offence, though generally, if he were caught, his master would simply put him in shackles to prevent a second escape, or might even let him off punishment (we have instances of this in the tablets); and to connive at a slave's escape was a crime against the state which merited death; but the master could not kill his slave.

Slaves might be prisoners-of-war. In the early days of Sumer when most wars were fought between neighbouring cities, any captives taken were indeed citizens of a hostile state but they were of the same race as their captors; they were slaves only through misfortune, and at any time they might be ransomed; moreover, one could not but remember that at any time

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another war might reverse the positions of slave and master. Slaves might be purchased abroad and imported into Mesopotamia; but there is a remarkable proviso that should such a one, on reaching his new home, be recognized as a Babylonian then he must forthwith be given his freedom. But the slave might also be a free-born citizen. A bankrupt might himself be enslaved for debt or, as was more common, might sell his wife, his son or his daughter into slavery so as to acquire capital to pay off his debts, or might simply hand them over as payment to his creditor. If a son, or an adopted son, disowned his parents he could be cast out and enslaved; and we have cases where a man has been reduced to slavery because 'he kicked his mother' or 'he struck his older brother'. The unfortunate who became slaves through debt could be ransomed at any time, and in any case their servitude was by law (though not necessarily in practice) only temporary—'Three years shall they work in the house of their buyer', says Hammurabi's Code, 'and in the fourth year he shall fix their liberty'; and in the meantime they were protected to the extent that should one die as the result of ill-treatment by his temporary master the latter's son was to be killed in retribution. In the case of real slaves, male or female, who had been temporarily transferred to another master in settlement of a debt, death from ill-treatment involved only a money fine payable to the original owner, and the master had the right to sell them for money if it suited his convenience to do so, and in the event of their being insubordinate could bore or cut off their ears. To this extent the slave is a mere chattel. On the other hand the Babylonian slave, at least in the first millennium BC and probably earlier than that, could, like the Hittite slave, own property and engage in business. According to Hammurabi's Code he could marry a free-woman, in which case his children would be free; but although, if he were assaulted and injured by a third party, his assailant was mulcted in a fine (one-half of what would have been paid for a freeman) yet the money went not to him but to his owner; similarly, were he sick, his owner had to pay the doctor (at a reduced rate) for medical attendance, but should the slave die under the treatment or suffer the loss of a member, then not he but his master was entitled to compensation from the unskilful practitioner. Obviously the Babylonian law attempts, at the expense of logic, to compromise between the rigorous definition of slavery which would make the slave merely an item of property and the recognition of him as a person entitled to the protection of the state. If we may trust the evidence of the tablets, the private owner found it more expedient—and perhaps more to his taste as a decent man—to be guided by the second view rather than to take full advantage of his theoretical rights, and the conditions of the slave's life were probably not nearly so miserable as some clauses of the law would lead us to suspect.

### *Slavery Amongst the Hebrews*

That this mixed conception of slavery was more or less typical of the Middle East down to the close of the second millennium BC is confirmed by the

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Hebrew Code. This is based on Babylonian (or Sumerian) law but does on the whole go farther in its humanitarian modifications of the system. The master's absolute ownership of the slave is undisputed: if a man smite his servant with a rod and kill him outright he is to be punished (presumably because violence of the sort is anti-social), but if the victim only dies 'after a day or two, he shall not be punished: for he is his money'; i.e. the pecuniary loss is penalty enough. Similarly if a slave be gored by a neighbour's ox, known to be savage, the animal's owner has to pay compensation, but the money goes not to the injured slave but to his master. On the other hand if a master, punishing his slave, puts out his eye or causes him to lose a tooth, he has to set him free; any Hebrew slave acquired by purchase could be kept for six years only and 'in the seventh he shall go out free for nothing'. Slavery for debt was also, in the case of a Hebrew, made light and temporary: 'If thy brother be waxen poor and be sold unto thee, thou shalt not compel him to serve as a bond-servant, but as a hired servant and as a sojourner he shall be with thee, and shall serve thee unto the year of Jubilee', after which he and his family were free to depart. By the Mosaic Code real slavery was reserved for 'the heathen that are round about you; of them shall ye buy bondmen and bondmaids', and for such there was no redemption or chance of freedom: 'They shall be your bondmen for ever.' It was a religious rather than a racial or political sentiment that mitigated for a Hebrew the terms of servitude but maintained their strictest severity for the unbeliever.

Although some of the buildings at Harappā look very much like slave-lines it is impossible, in the absence of written records, to say whether slavery really did exist in the Indus valley civilization and, if so, what was its character; but for the Middle East it was, as we have seen, one of the basic features of society. The superstructure of society was formed of the free citizens. In the case of the Hebrews all these were of equal standing; there were 'elders' and 'heads of the congregation' who enjoyed a certain moral superiority and were the guardians of tradition, but legally there were no social distinctions 'seeing that all the congregation are holy, every one of them'; the accidents of riches or of poverty, except in so far as debt might reduce a man to temporary servitude, did not affect the status of the individual citizen.

*Classes in Mesopotamia*

In the Code of Hammurabi the distinction is constantly drawn between 'the gentleman', 'the poor man' and the slave. On the strength of this it might be imagined that Sumerian and Babylonian society, apart of course from the slaves, was divided into two categories according to their financial qualifications. For the purposes of the penal clauses of the Code this was indeed a convenient classification, and of course it is based upon fact, but it does not justify the deductions generally drawn from it. The terms used, *awlîum* or *amelu*, usually translated 'nobleman'[7] or 'patrician', and *mushkenu*, 'semi-free' or 'plebeian', suggest a ruling oligarchy lording it over the mass

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of the population, but such was certainly not the character of the Sumerian or Babylonian polity. The *mushkenu* formed a separate class; they were clearly distinguished from the slaves and in fact could themselves own slaves; they differed from the *amelu* in that the punishments inflicted on them for crimes of violence were less severe than those incurred by the *amelu* and, similarly, compensation paid to them for injuries done was only half of that due to the noblemen, though much more than that due to a slave; but most of the clauses of the Code are meant to apply equally to *amelu* and *mushkenu* and in some the equality is directly stated: 'If a slave of the palace or a slave of a poor man . . .'—the two are evidently on the same footing. On the other hand the *mushkenu* were not eligible for government office; it is probable that they could not own land in fee simple but only as tenants held land allotted to them by the government in return for certain services; and although they were liable to conscription they were seldom if ever allowed to carry arms, their duties being limited to those of camp-followers and of the army service corps. They were free men, but they were held in subjection; they enjoyed most of the privileges of citizenship but were of less account than the gentry, and their loyalty to the state was not above suspicion. Probably they were descendants of old stocks which had been submerged by the successive invasions of Mesopotamia; they had not been enslaved, but they had never been admitted into full community with the later comers. Presumably they were small farmers, either on their own account or as hired hands, labourers, artisans and petty craftsmen, and just as their standing in the state was low so their numbers were not very great. Hammurabi's Code was here, as throughout, re-editing in an amended form the enactments of earlier Sumerian legislators, and in the old days strong measures may well have been required to repress a potentially dangerous element, but the danger would grow steadily less. Had the *mushkenu* been very numerous their exemption from carrying arms would have limited unduly the military forces at the disposal of the government, but they were a diminishing class and in later history they disappear altogether; some perhaps by success in business managed to rise in society, others on the contrary sank and were absorbed in the ranks of the slaves.

The term *amelu*, then, is a comprehensive one, applying to all free citizens; but it includes a variety of social grades.

As was to be expected with a constitution which was by origin purely theocratic and to a large extent maintained that character throughout Babylonian history, the king, who was god's representative on earth, and the priesthood which naturally came directly under the king, formed the dominant order. To them in time were added the scribes. At first the scribes must have been temple priests, but as education spread men trained in the temple schools could become scribes without taking orders; so honourable a profession was it that we have several instances of members of the royal family

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claiming the title of 'scribe' and scribes might hold the highest posts in the civil government; their position was indeed much like that of the clerks of mediaeval Europe. A second class was that of the hereditary nobility, the real 'patricians', who wore their hair long behind and were addressed in letters by the title *amelu* just as the German noble was entitled *Hochwohlgeboren*. They supplied the members of the Council of Elders of their native city or community and took a prominent place in the administration of justice both as judges and as assessors, and their decisions on points of fact were final; as courtiers they were in close attendance on the king and therefore, whether holding office or not, exercised a great influence upon the government; and they filled the higher ranks of the standing army in the Babylonian period just as earlier they had naturally assumed the command of the national levies.

Socially below these came the bulk of the free population. All of them were, in theory at least, liable to military service, and that liability was indeed the guarantee of their full citizenship; whether, or to what extent, they were actually called up in peace-time it is not possible to say, but the machinery certainly was kept in readiness. The recruiting officers both for the armed forces and for the transport and auxiliary contingents seem to have been on a permanent footing and had to perform their duties in person when summoned to the king's service; but in normal times they lived at home and cultivated their land. They were actually farmers. They were granted by the state fiefs which they were bound to cultivate and keep in good condition and which were inalienable;[8] the lands could not be sold or pledged, but on the other hand they could not be taxed or taken from the owner by the judgement of the courts or by the act of the governor of the province. The privileges which such a man enjoyed in respect of both his person and his properties (if he were captured in war and his liquid assets were insufficient to pay his ransom the debt became a charge on the local temple or, failing that, on the state) are quite inconsistent with a 'plebeian' status; but they were not the privileges of wealth—the 'gangers' were not rich men, as is clear from the clauses of the Code, and their fiefs were quite small; the distinction therefore between *amelu* and *mushkenu* is not that between rich and poor but between the full citizen and the 'half-free'. Owing to the secular rivalry of the Sumerian city states the army was, next to the cult of the city's god, the most important institution of society, and therefore the terms 'citizen' and 'soldier' were, as we have seen, virtually interchangeable. But the citizen-soldier was also, when not on active service, a farmer, an artist, a merchant, a manufacturer, a craftsman; all such then might be freemen of the state. Much of Hammurabi's Code is framed for the protection of this middle class, which was financially so vulnerable but from the legislative point of view ranked almost, though not quite, with the 'gentry'. The term *amelu*, which perhaps originally meant merely 'man', was arrogated to themselves by a ruling class whose members alone had value in their own eyes and formed 'the state' proper; it was therefore reserved to the narrow class of the nobility. But the content

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of the word widened as class distinctions became less clear-cut, and even in Hammurabi's day *amelu* must have been somewhat of an anachronism as implying noble birth, and in time it lost that special significance altogether and came to mean simply 'man'. The Sumerian and the Babylonian state, in spite of its autocratic monarch, its traditional nobility, and a priesthood in which was embodied the awe of the divine Power behind the throne, was none the less in some ways curiously democratic.

*Classes amongst the Hittites*

The Hittite law distinguished sharply between freemen and slaves, but regarded all freemen as equal. There was no middle class, and distinctions of rank did not interfere with the parity of rights. It must be remembered that Hatti was a confederacy of various tribes some of which had been allies from the outset, some brought in originally under compulsion but accepted as fellow-members; they did not lose their identity in any way, retaining even their different languages or dialects, and that being so they were not likely to allow the prestige of their leading families to be overlooked. The 'Great Family' which formed the court of the king of Hattusas and shared amongst themselves the chief offices of state probably included what had been the royal houses of the old 'Hittite' tribes; if they were called the king's 'kinsmen' the term may well refer to the oath of blood-brotherhood which originally bound the tribes together, and this would explain the elective character of the kingship in the early days of the confederation. Naturally these great nobles ranked socially above the rest of the citizens, and together with their official underlings and with the fighting troops formed the *pankus* or Assembly which, again in the early days, might be called together as representing the entire community; but this, their sole political privilege, fell into abeyance as the kings ceased to summon the *pankus* and even socially the noble caste seems in time to have become less exclusive. Certainly it was to the advantage of the ruler to weaken a class which in the past had put forward rival claimants to the crown, and as his own power increased the legal equality of all free Hittite citizens put them more and more upon a common footing.

The fifteenth-century census lists found at Alalakh and the Mari letters are quite explicit on the subject of the social organization of the Hurri. Apart from slaves, who do not figure in the lists, which were drawn up for the purpose of levy for service and possibly for taxation, there were three well-defined classes. The lowest and the most numerous class was the *hupšu*, semi-free serfs who were subject to the *corvée* and to military service; the alternative name applied to them, *ṣabē namē*, probably means that they lived not in the towns but either on their outskirts or in the open country; they owned houses and small plots of land, but since they are often noted as 'having no ox (or cattle)' they might be men of very small substance. Above them came the *ḫaniaḫu*, the middle class, which included tradesmen, gardeners, royal herdsmen and grooms, etc. The aristocracy, the *mariannu* class, was distinguished

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by the possession of a chariot (or wagon?), but since the rank was hereditary that material qualification might sometimes be no more than a polite theory, so that occasionally there is written after the man's name the note 'possesses no chariot'. The *mariannu* seem to have been the leading citizens in all walks of life, and the class was a small one—in Alalakh itself they numbered only thirty-four, and in the villages and small towns anything from one to thirteen; since, however, the head of one local levy had eighty charioteers under his command it must be supposed either that not all chariot-owners were of the *mariannu* class, or else that a rich member of the class might own a number of chariots. There are two or three references (*not* in census lists) to *mushkenu* impressed into military service, but such do not seem to have formed a social class; they may simply be 'poor men'.

## THE ARMY

In the foregoing chapters constant reference has been made to the direct or indirect influence of the army upon the history of man's advance in civilization. In so far as the fighting forces of a country have protected its culture from destruction by hostile invaders or have by foreign conquest extended that culture into backward areas, their contribution has been obvious, and as an outstanding element in the social organization they cannot be disregarded. It must be remembered also that success in war and the resultant capture of prisoners was one of the chief sources of the slave-labour which for many early communities was essential to progress, and that the economic and administrative stability of governments has always been conditioned by the armed support at their command. While this is in no sense a military history, a brief sketch of military development and organization is needed to explain how, in different countries, the army came to play the part it did, affecting in varying degrees the lives of the people.

The origin of the army is, of course, the 'nation in arms', the *levée en masse* of the male members of the community for purposes of defence or attack. The Hebrew people did not pass beyond this primitive stage until the days of the Kingdom; every man was a fighting man at need, called up and commanded by the recognized head of his clan. The pre-Dynastic Egyptians had their territorial basis, each nome or district providing its own militia which marched under a nome standard and was presumably raised and commanded by the prince or great landowner who was the nome's governor. With the unification of Egypt the system was altered but little. The nomarch confirmed in office would, in the event of war, be summoned by the central government to produce his contingent; but it was a contingent of his own men, owing allegiance primarily to himself, and when in times of national disorganization the nomarch asserted his independence he could count upon his local troops to fight for him against his neighbours and the Pharaoh alike. But these local troops were not regular soldiers. Military service in Egypt was merely one

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form of the *corvée*. The peasant was called up now for digging irrigation canals, now for mining and building work, now for the army; and in each case when the work was finished he went back to his home labour. Such casual and intermittent compulsory service was neither meant nor expected to produce a regular army; the most it could do was to form a *cadre* of officers able to organize and discipline the raw levies supplied by the nomarchs; and these officers would be appointed by and responsible to the Pharaoh alone. It was an unsatisfactory system, for as long as the nomarchs retained their armed following the central government could not feel itself secure. The Middle Kingdom saw the final suppression of the old territorial nobility, and Pharaoh became the sole head of the Egyptian army.

It was under the Middle Kingdom rulers that aggressive warfare first in the Sudan and then in Syria changed the conditions of service. Troops were now required not to meet some sudden and short-lived emergency but to embark on foreign expeditions whose duration might well be prolonged, disregarding the regular 'season when kings go forth to war' which was the season after the safe harvesting of the crops. In these circumstances the old form of general conscription could not be enforced; the food-supplies of the nation would not be forthcoming unless the conscripted peasant were there to work the fields at the proper time. What was needed was a standing army, and for this trained officers were available; but the difficulty of raising sufficient troops without disrupting the country's economy remained. Moreover, the Egyptian was by disposition no soldier, and the forces which had served well enough in domestic warfare against fellow Egyptians were not to be depended upon when it came to fighting Asiatics. The result was that the regular army was largely formed of foreign mercenaries. Even under the Twelfth Dynasty the royal bodyguard consisted of Sudanese regulars, and soon afterwards in the armies of Egypt that overran Syria the native Egyptians (professional soldiers by force of circumstances) were outnumbered by the Sudanese, Libyans, Shardanu and Syrians in the pay of the Pharaoh. The army, in fact, was not national but royal; the cost of it was defrayed by the ruler out of the enormous revenues of the crown, supplemented by the booty taken in war; it had very little to do with the people in general. The peasant might still, under the *corvée*, be called up for some para-military duty as camp-follower or whatnot, but to all intents and purposes he was quit of the army service which he detested and war—always waged far away on foreign soil—meant nothing to him.

In this, as in so many other respects, the course followed by Mesopotamia was radically different from that taken by Egypt. The beginnings were necessarily similar, the *levée en masse* of a village community threatened with attack; but as the delta came to be more sharply partitioned off into city states owing allegiance to different patron gods, land-hunger and, still more, jealousy regarding water supplies, led to endemic wars. Because it was the city's god who led the attack or marshalled the defence every pious citizen

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was bound to follow his standard, and the local *ensī* or king, who represented the god, naturally took command. The *ensī* was a permanent official, and the captaincy of the city's forces was one of his principal functions, and where those forces were so constantly engaged it was his duty to see that the citizen army[9] was adequate to its task; they might not be regular soldiers, but they had to be organized and trained for regular warfare.

On Eannatum's 'Stele of the Vultures' (Pl. 18, a) we can see how, by the early part of the third millennium BC, the Sumerians had evolved a military formation which has a definitely professional look, and on the 'Standard of Ur' that professional aspect is emphasized, and at the same time certain technical advances seem to have been made.

On the stele the best troops—the *corps d'élite*—are foot-soldiers uniformly equipped with bronze (or copper) helmets, big rectangular shields and long spears, who are drawn up in a six-deep phalanx; other troops, with helmets but no body-armour, wearing only the fleeced *kaunakes* kilt and carrying long lances, advance in double file; the ruler himself appears on foot at the head of the phalanx, wearing the fleece robe and carrying a short curved sword, and a second time he is represented at the head of the marching files, but this time he is mounted in a chariot and wields a long spear, while in a quiver in front of him there are light throwing-javelins. On the Standard (Pl. 17, b) there is again a phalanx, but it is differently equipped; the soldiers wear helmets and heavy cloaks (probably of leather with metal studs) but have no shields, and instead of spears they carry short battle-axes. The light-armed skirmishers engaged with the enemy wear only helmet and kilt, or, at most, a light shawl, and their only weapon seems to be the club. The real innovation is the chariotry. The king still has his own royal chariot, but now there is a chariot corps; the cars, drawn each by four asses, carry two men, a driver and a fighter armed with battle-axe and a sheath of light javelins.

Such organization of the service into branches distinguished by their armament is the sophistication of military science attempting to forge a decisive weapon. But it is clear that everything is still experimental. The change in the character of the phalanx was an experiment. The ass-drawn chariot had long been known—since the Uruk period at least, for it is mentioned in the epic poem 'Enmerkar and the Lord of Aratta' which refers to the close of the fourth millennium BC; for Eannatum it is a royal distinction, on the Standard a divisional arm, and after that time it seems to have dropped out of use except, perhaps, for ceremonial purposes. Again, the bow was in common use in Sumer in the al'Ubaid period (as it was in Egypt, where archers formed part of the army throughout all history),[10] but it is only once figured on an early Sumerian monument and then as used against animals, not men; the arrows found in the grave of Mes-Kalam-dug at Ur—roughly contemporary with the Standard—were sporting arrows, not weapons of war; yet on the stele of Naram-Sin (Pl. 18, b) the king is shown holding a bow, implying that for the northern Akkadians at any rate it was an approved and

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honoured arm. The same stele suggests also that the kings of Akkad abandoned the phalanx drill and relied rather upon open fighting, tactics which would accord with the employment of archers.

The Sumerians had been, so far as we know, civilian soldiers, well-drilled and experienced volunteers in the service of the city's god. The Akkadian kings, however, conducting campaigns as far afield as Cappadocia and the Mediterranean coast, had need of a professional army; thus Sargon had a standing force of 5,400 men who 'ate daily before him'. Circumstances made the same demand here as in Egypt, but nothing could be more unlike the Egyptian army than that evolved by the Sumerian kings and perfected by Hammurabi.

The Babylonian army was based upon a system of conscription; lists of all those liable to military service were kept in the state registers. By no means all the population was liable. The *mushkenu*, as we have seen, were conscripted, but only as camp-followers, and even listed men might be excused if circumstances justified it, e.g. where two brothers were recruited one might be released if family affairs so required, a shepherd or a baker might, if indispensable, be returned to his civil occupation; but the appeal had to be approved by the king himself, and in some cases he would demand a substitute; on the other hand, it was a penal offence for a recruit to substitute another man for himself without the royal permission. No slaves and no foreigners were enrolled. So far as possible the men taken were the sons of old soldiers, and this hereditary calling meant the creation of a military caste and a corporate spirit which was invaluable. For the ordinary soldier was not kept permanently with the colours; unlike the personnel of the small standing army, 'the King's Troop', he could return to civil life in the intervals of service, rejoining the ranks when called up by the recruiting officer but rejoining a profession and a company already familiar to him. Discipline was necessarily strict, but the rank and file were protected against harsh or unfair treatment by their officers, and they seem to have been well fed and reasonably paid. Rations had to be supplied by the city governments for the troops in their area, and in addition special taxes were levied, apparently upon individual citizens, to provide pay; thus one Imlik-ilî states that he has paid five-sixths of a *mina* of silver for fifty soldiers, and this would appear to have been a compulsory payment rather than a voluntary subscription like the Greek 'liturgy'. But the main attraction to the military life was the gift of land. To every soldier the king gave a parcel of land on a feudal basis; it carried the duty to serve, but it was inalienable and (with the same liability) hereditary; during his absence in the field he could let the land or take a partner, but on his return, in not more than three years, he could reclaim it for himself; but he was bound to cultivate and crop his land; should he fail to do so for more than three years on end, and some other man tend the neglected property, then, and in this way only, did the feeholder lose possession—a very proper subordination of private ownership to the public good. Yet another privilege

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enjoyed by the Babylonian soldier was that if he were taken prisoner by the enemy and could not himself afford his ransom this should be paid by the temple of his home town or, failing that, by the king. He was indeed a favoured person; and, since both the favours and the command were vested solely in the king's person, his loyalty could be taken for granted, and in fact we hear of no such thing as a military revolt. That the Babylonian army degenerated as it did after the time of the First Dynasty of Babylon was in part due, it would seem, to the growing commercial wealth of the country which outbalanced the privileges of the military and made army service unpopular, so that a returned prisoner could say 'No more soldiering for me'; but in part also to the introduction of the horse-drawn war chariot, which revolutionized tactics and made the Babylonian army out of date.

The Hittites seem to have been the first of the Western Asiatic powers to make regular use of the horse. It had long been domesticated in central Asia, as at Anau. Horsed chariots were buried in the royal tombs of China in the fourteenth century BC. The chariot reached Anatolia (presumably through the Hurri acting as middlemen) not later than the close of the third millennium BC, and very soon formed the most important arm of the Hittite fighting force. The Kassites brought the horse into Mesopotamia, where a later Kassite king boasted that horses were 'as common as straw', and Syria took them over from the Hurri; if the Egyptians did not see them in Syria they were to learn of them when the Hyksos war-chariots broke into Egypt. Everywhere the horse was used for the war-chariot alone, not for ordinary draught purposes or for riding; but no country failed to recognize the value of the new weapon. Mesopotamia had long since discarded the old Sumerian ass-drawn chariot; the Egyptians had never used the ass for any draught purpose, for the excellent reason that their valley bottom, cut up by innumerable water-channels, was almost impracticable for wheeled traffic, and the natural method of transport was by water. The horsed chariot, therefore, was for the Near East a real innovation. It was a costly weapon and as such tended to emphasize social distinctions in the army. When, as was the case with the Hittites, the chariotry, like the infantry, were furnished by the cities of the empire, they took precedence over the mere footmen, whether those were fellow townsmen or the retainers of the great nobles, and yet more over the mercenaries such as the Sutu bowmen. Amongst the Hurri, chariot-owners formed the highest social class. When, as in Egypt, the charioteer provided his own equipment—which only the rich could afford to do—the development of the arm increased also the social position of the aristocracy in the state. In the latter half of the second millennium BC victory in war was held to depend upon the numerical strength of the chariotry engaged on either side, so that every effort was made to raise the largest force possible: if we can believe Egyptian accounts, the Hittite army at the battle of Carchemish consisted of 17,000 infantry and no less than 3,500 chariots. But it was a weapon whose real value was largely psychological, as is evidenced by

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(b)

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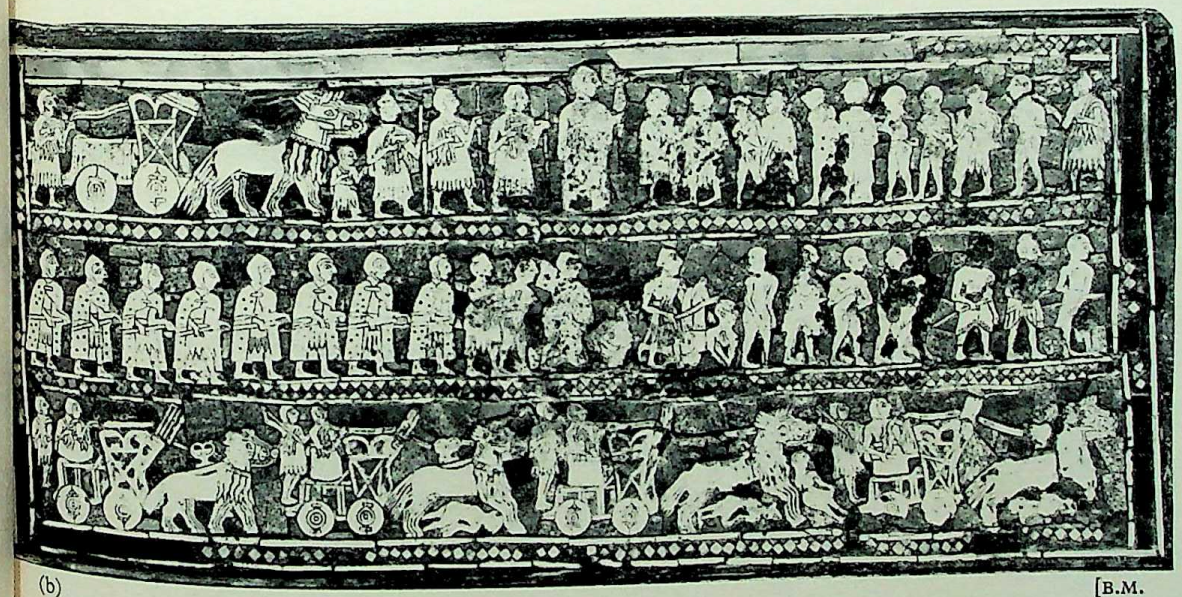
(a) [D.A.E.

17 (a) *Sudanese troops of the Egyptian army*
(b) *The 'Standard' of Ur*



(b) [B.M.

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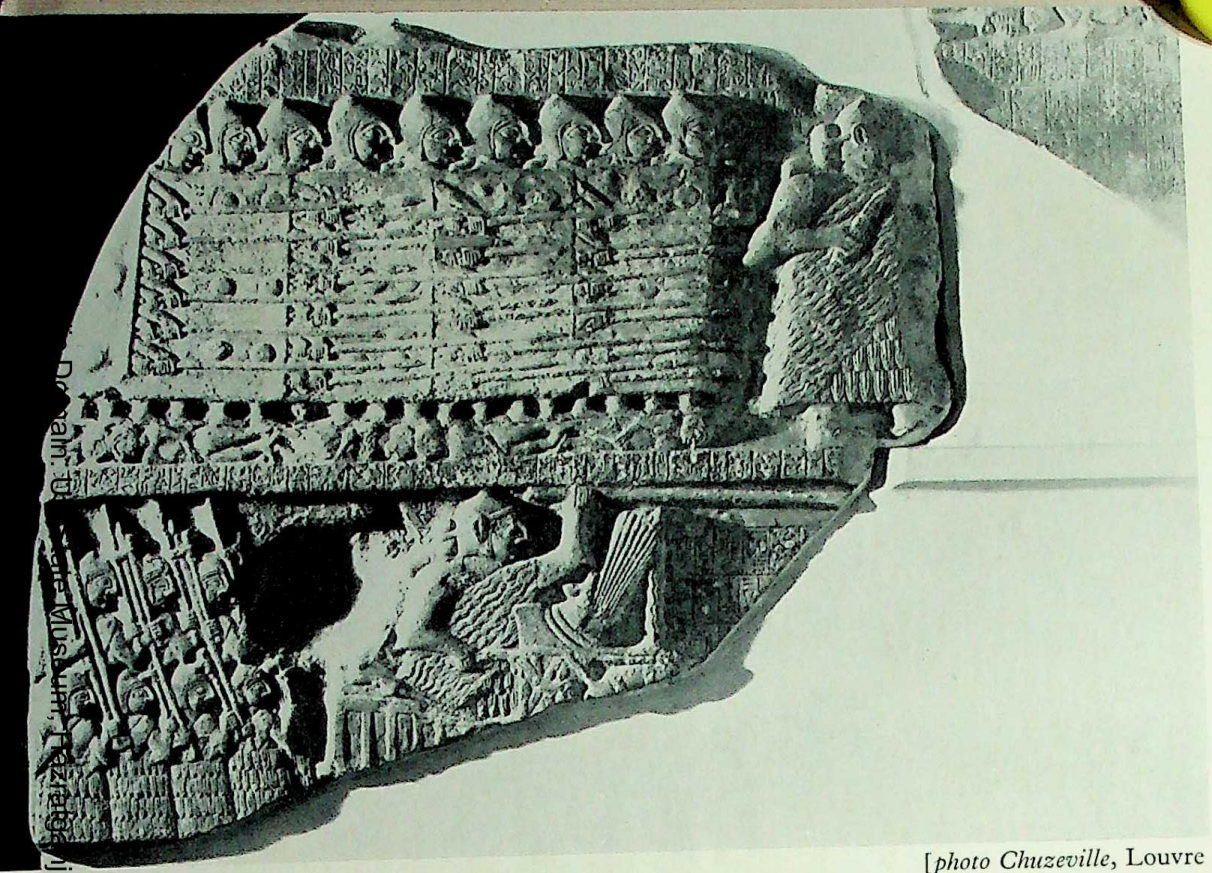

[*photo Chuzeville*, Louvre

18 (a) *The 'Stele of the Vultures'*
(b) *The Naram-Sin stele*

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the Hebrew dread of the 'chariots of iron' of the Philistines; it did indeed secure quickness of manœuvre, but more important was the terror which it inspired in the inexperienced foot-soldier. At the battle of Kadesh the infantry division of Rê, taken by surprise by the Hittite chariots, simply took to its heels, and the Amon division broke at the mere rumour of them; for a long time the struggle remained largely a chariotry battle in which the combatants seem seldom to have come to very close quarters, each side advancing and retreating alternately (the Hittite infantry was on the other side of the river); but as soon as the scattered Amon division rallied and marched up, and the Sutekh division appeared in the south, the Hittite chariots, unable to face unbroken infantry, simply withdrew across the river and abandoned the fight. It was not without reason that the Achaeans used their chariots to manœuvre and dismounted from them to fight; when the new weapon ceased to strike terror it ceased to be effective, and though the Assyrians were to use it still to good purpose, it gradually fell into disuse, becoming a parade weapon rather than an instrument of war.

## LAW

It is, of course, obvious that no real community, however small and however primitive, can exist and hold together unless certain rules regarding the relations between members of the social unit are recognized as binding upon each and all. Such rules may originally have been imposed by the arbitrary will of the strongest member of the unit, or they may represent mutual concessions whereby the individual will submits itself to a régime tending to the common good; whatever their ultimate source, their observance is manifestly to the general interest, and therefore the free community as a whole will be prepared to defend and perpetuate them.[11] So essential are they to the very existence of society that, as custom crystallizes into precedent, they are apt to acquire an authority of their own which is independent of the views of the living members of the community; so far from the state being conceived as making the law, men tend to assume that it is the law that makes the state. But as life becomes more complicated under the conditions of an urban civilization, changes are bound to occur in the laws. As the government enlarges its scope and strengthens its authority it will include in its province much that in old days had been left to the jurisdiction of the village council or the *pater familias*, and it will insist on a uniform system to replace the varying customs of the once independent units; and it is also true that men living under the rule of law achieve in time a moral outlook different from that of the law's first authors, so that its tenets no longer satisfy them. A revision of the law, modifying the ancient precedents so as to bring them into harmony with the changed conditions of society, becomes desirable; but because it is dangerous to tamper with the law, any change is likely to be promulgated not by the state at large but by some individual whose undisputed authority ensures general obedience. The ancient 'codes' of which we



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have knowledge are almost all associated with the names of some such outstanding character—the Code of Hammurabi, the Code of Moses, the Code of Hattusilis or of Suppiluliuma, and so on.

Although it is possible to get an idea of legal practice from court records such as the Kerkuk tablets for the Mitanni country, or the 'Tomb Robbery' papyri for Twentieth Dynasty Egypt, the real nature of law can be understood only from the formal presentation of its tenets in the shape of a code. In view of the total lack of documentary evidence we can have no notion whatsoever about the laws of Harappā and of China under the Shang Dynasty. As regards Egypt, although Greek writers assure us that the Egyptians codified their laws, yet no fragment of any such code has come down to us—'indeed, we know remarkably little about Egyptian law in the concrete', observes Professor J. H. Breasted, 'and not very much concerning the spirit in which it was administered'.[12] In the case, however, of Sumer, Babylon, Assyria, Palestine and Hattusas enough of the old codes is preserved to illustrate the character and the development of the country's legal system.

As might be expected from the brief sketch of their origin suggested above, these 'codes' are not really codes at all in the modern sense of the word; they are not a codification of the laws of the land but partial redactions based on ancient practice or precedent. The law-giver is not attempting to produce a *corpus juris*; he is publishing a list of emendations of such clauses in older compilations as call for alteration or addition in the changed circumstances of his day, and clauses that need no emendation are not included in his list but are taken for granted. They are casuistical, not theoretical at all; Hammurabi, for instance, makes no apparent attempt to seek for legal principles; his purpose is to give instructions to the judge, and his clauses are not records of decisions commonly given but models for decisions to be given in the future. Hammurabi was bringing up to date a *corpus* of common law which had long before his time been 'codified' by Libit-Ishtar of Isin, by Ibi-Sin and by Ur-Nammu of Ur and by other and still earlier rulers of Sumer, as well as by his own ancestor, Sumu-la-ilum of Babylon. Legislating for a wide empire, he had to reconcile established Sumerian practice with the not necessarily concurrent views of his own Amorite stock and, in particular, he had to adapt the system to a society composed not of two classes, like the old Sumerian, but of three, a change which must surely be attributed to the traditions of the now predominant Semites. Similarly, too, in the Hittite Code the earlier version has to allow for different views regarding crime and punishment prevailing amongst different member-states of the Hittite confederacy, while the later versions attempt to rule out such anomalies and insist upon uniformity throughout the empire.

The clauses of the Code of Ur-Nammu, so far as can be gathered from the fragmentary text, can on the whole readily be recognized as prototypes of the similar but not identical laws of Hammurabi. The most significant difference is that the Ur-Nammu Code, in all probability, knows of two social classes

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only, the freeman and the slave, and does not take into account any social group corresponding to the *mushkenu* of Hammurabi's Code. In this respect it would appear that the Libit-Ishtar Code agrees with that of Ur-Nammu; generally speaking, however, it is very similar in structure and import to Hammurabi's, so much so that either Hammurabi copied Libit-Ishtar or both codes are derived from a common source. But in the later Babylonian Code there are often qualifying additions made to the Isin clauses, or even definite alterations; thus, whereas according to the Isin law the slave-born children of a free father have no part in the father's estate, the Babylonian law gives to the father the power to legalize such children by the simple declaration 'You are my children'.

It is remarkable that in Hammurabi's Code the principle of retaliation plays a larger part than it had done in the Codes of Libit-Ishtar and Ur-Nammu, and the death sentence is invoked more widely. This has been described as a case of 'archaism' on the part of the legislator; but it can equally well be explained as the result of a stronger and more centrally-organized government. In a primitive society the *lex talionis* answers to man's natural instincts; it is the individual who is injured and the individual attempts to do to the other as he has been done by. But because violent revenge, however justified, leads to fresh violence and is anti-social in its effects, the primitive community is anxious that peace should be made between the two parties, and this is best done on a 'financial' basis; the families interested in preventing a blood-feud meet together, if necessary under the presidency of their tribal chief, and assess the injury and arrange payment by the injurer. But with the growth of a centralized government what had been civil offences become crimes against the state, whose welfare is threatened by them. It is not for the private citizen or for the tribal gathering to deal with such crimes; the state must defend itself, and in proportion as the offence is more heinous the sanction must be more severe; retaliation takes the place of settlement. The fact that in most cases where Hammurabi introduces the death penalty it is for assaults on the upper class of citizen, i.e. on those who were of greater importance to the state, can be held to show that the increased severity of his code is a condition of social progress rather than an archaistic relapse.

The mere fact that these Asiatic legislators are concerned with the revision of older codes means that those codes were not looked upon as sacrosanct. It is true that all Sumerian law was nominally what Urukagina of Lagash claims his own code to be, the 'Word' of the city's god, but that is simply due to the fact that the Sumerian city state was theoretically a theocracy, and Urukagina, as the *ensī*, the human representative of the god, spoke in his name; similarly legal cases were heard in the temples with priests as judges, but that, too, was because the god owned the city and his ministers were the ministers of state. Urukagina's Code could be altered by any other ruler speaking in the name of the city's god. It is true, again, that Hammurabi headed his great edict with a carved relief showing him standing in reverence before the Sun-god

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who holds the measuring-rod and line, symbols of justice and straightforward dealing; the laws which the king promulgates are based upon the principles of divine justice, and in formulating them he has sought the inspiration of god. But the actual laws are not dictated by Shamash. Human law is but an approximation to the divine. The old code had been an honest attempt to legislate in accordance with the will of Heaven; but social conditions might change and also men's views of the will of Heaven might be broadened; a new version of the law might therefore be called for, but the revision would be based upon the divine justice no less than had the original. This is particularly clear in the case of the Hittite law; the whole tendency of the later version is towards the mitigation of punishment and the substitution of a fine for the corporal punishment of a less highly civilized era. On the other hand the Assyrian Code, which is based upon the Babylonian, is infinitely more severe; it faithfully reflects the brutal materialism of the Assyrian empire and the low moral standard of Assyria's gods with whose character the more humane enactments of Hammurabi were inconsistent; so that revision, in this case, meant revulsion.

A very different view of the law was held by the Egyptians and by the Hebrews. That an Egyptian Law Code existed long before the explicit mention of it by Greek authors is a reasonable assumption, but there is little material evidence to support it. In the time of the Eighteenth Dynasty we find an utterly obscure allusion to a clause in 'the Book of Memphis, being the Word of the Sovereign, the mercy of the Vizier', and in Rekhmirê's tomb, describing the induction of the vizier,[13] it is said 'and as for the office in which you judge, there is a spacious room in it full of [the records (?) of all (past)] judgements': there are what seem to be vague references to a code in the Middle Kingdom, and on such grounds it appears likely that something in the nature of a *corpus* of law went back to the early centuries of the third millennium BC. But while it might be too much to expect that a complete code should survive, what is remarkable is that at no period have we any evidence for a revision of the primitive law. Even Harmhab, who had to cope with the complete disorganization of society that resulted from the misgovernment of Akhenaton and his feeble successors, and who claimed that he had 'improved the laws of Egypt', really limited himself to a reform of the administration. Having acquainted himself with the corruption that was rampant everywhere 'he dictated to his personal scribe in his private chamber a series of highly-specialized laws to suit every case of which he had learned', but none of them altered or affected the old laws; they were all directed against the practice of extortion from the poor by fiscal and administrative officials; in other words, he made no change in the original code but merely added sanctions for breaches of it. Even the 'unprecedented' step whereby he relieved the salaries of local judges from income-tax charges so that they might have no excuse for illegally enriching themselves was but a treasury concession involving no change in the law as such. Judging from such

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evidence as we possess—negative evidence for the most part—it would certainly seem as if Egyptian law were throughout its history relatively static. Because Pharaoh was a god he could of course issue any order that he pleased and it would have no less authority than the traditional law; but if such *ad hoc* orders were made, as presumably they were, they were valid only for the time being, after which the old code resumed its vogue unchanged; there is no record of any official revision supplanting the original version of the law.

Something of the same kind is true of the Hebrews. Like Hammurabi, Moses[14] did not arbitrarily invent a code but drew up in codified form a list of traditional laws which were to be observed for the future. The traditions on which he relied were mixed. Some were peculiar to the patriarchal clan from which the Hebrews claimed descent, some were borrowed from the peoples with whom the patriarchs had been in contact—thus, the law concerning the bull that gores (Exod. xxi. 28) is taken directly from the Sumerian law which was to reappear as clause 251 in the Code of Hammurabi (compare also Deut. xxiv. 7 with Ham. § 14; Deut. xxi. 1–9 with Ham. § 23; Deut. xxiv. 1 with Ham. § 137)—and a few were original enactments prompted by experience. That all these should be set down in writing as a *corpus* of law was a course for which precedents abounded—both the Egyptian and the Mesopotamian Codes were familiar enough—but the circumstances of the Hebrews were altogether peculiar. They were a horde of nomads with no recognized government to execute the law. Moses (see p. 512, n. 14) himself was indeed a leader, but not a member of a ruling dynasty, and his ascendancy was purely moral and personal and afforded no guarantee that his enactments would be respected after his death; in that inchoate society the administration of the law had to be left very largely to the heads of families individually or to the same heads acting in conclave as a tribal council, and experience had shown how little reliance could be placed upon them. The only efficacious sanction for the Mosaic Code was the sanction of God. Accordingly, in that code purely religious clauses—the tenets of the Hebrew faith—are joined with the social and penal clauses selected from established law as being applicable to the manner of life of a nomadic community; and all of these alike are represented as commandments issued directly by Jehovah in person. This was a divine law. Later generations might—and did—add to it, claiming that they did so in the light of further revelation; but there could be no revision of the original code and no omission or modification of any of its clauses; the Word of the Lord was to endure for ever.

Amongst the ancient systems the Hebrew is unique in making religion the basis of law and thereby establishing a moral code. Actually its provisions, relatively few in number, vary widely in their ethical values, ranging from broad principles like the forbidding of murder to detailed regulations suited to the social organization of a primitive tribe or aimed at that tribe's perpetuation as such; it is even less systematized and less coherent than the Mesopotamian and Hittite 'Codes' and shows none of that progressive development

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which in them results from long juridical experience. But the social aspects of the Mosaic law as enunciated by its founder were so far in keeping with Hebrew conditions that they could easily be assimilated by the barbarous tribesmen, and with that acceptance went the recognition of the law's moral basis. If the historian desires to record the progress made by man in the course of the second millennium before Christ, in legal theory and practice, he will turn his attention to those more civilized lands wherein the ancient tradition of the courts was constantly adapted to social advance and the mutual relations of citizen and state were reconciled on the grounds of expediency and common sense; yet it remains true that the Hebrew Code was the first in which it is explicitly stated that law is something more than a compromise assuring the interests of the individual and of the government, that it depends not on historical precedent but upon ultimate morality. With the collapse of civilized states their traditional systems of law have for the most part vanished with them; few nations have suffered eclipse more complete than that of the Hebrews, but none the less 'the laws of the Lord, His statutes and His judgements' have survived unchanged up to the present day.

Whereas the Mosaic Code was put forward as a *corpus* of law, a general guide to conduct, the Mesopotamian and Hittite Codes were, as has been said above, merely lists of emendations of older laws. Many of those laws, probably, had never been codified at all; they were traditional, and so far taken for granted that no reference to them was necessary. Hammurabi, for example, lays down no rule about murder, except when the killer's method was witchcraft, for which the penalty is death, or when a brigand murders and disappears, in which case 'the city and governor in whose land and district the brigandage took place shall pay one *mina* of silver' to the dead man's kin. The custom of the blood-feud whereby the murdered man's next-of-kin takes vengeance into his own hands was too well established to be subject to change, and so Hammurabi says nothing about it, though by legislating for manslaughter as opposed to deliberate killing he does confine the blood-feud within reasonable limits. In the same way the Hittite Codes deal only with exceptional cases of marriage and are altogether silent on such important subjects as adoption, inheritance and the laws of contract; they did not legislate on these matters because they were adequately regulated by the customary law of the people.

As a general rule the clauses of the law in any 'code' are put in the form of hypothetical cases followed by an appropriate ruling. Whether or not this quotes a precedent that has actually occurred in the courts of law, it is obviously an instruction to the judge trying such a case in the future. For the further convenience of the judge the clauses are roughly grouped according to their content, but the grouping does not seem to follow any logical classification of offences; even what we should call the fundamental distinction between criminal and civil law is here entirely disregarded. The underlying

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motive of all law was, evidently, to uphold the authority of the state and to preserve the social organism, for which latter purpose the family, as the ultimate unit of society, demanded special protection. Offences therefore can be classified as being against the gods, against the state, or against the individual; regulations are laid down for all family affairs such as marriage, adoption and inheritance, regarding which family quarrels might easily arise; in addition, conditions of trade, hire charges, wages and rates of interest are fixed by law so as to obviate disputes.

The economic clauses really explain the character of the code. That they were meant to be generally valid is unthinkable, for tariffs would necessarily vary according to supply and demand, and the ancient kingdoms did not dispose of a bureaucracy capable of enforcing an artificial uniformity on private business such as even under a modern government only begets a black market. Actually in Mesopotamia the terms of the business contracts of Hammurabi's time do not at all conform to the figures given in his Code.[15] It is quite clear that merchants were free to make their own arrangements, to fix their own rates for hire and to agree with their workmen as to the wages to be paid. But if there were no written agreement, or if the financial terms were in dispute and the case was brought into court, then the judge in assessing payments would base his finding on Hammurabi's edict. The purpose of the economic clauses is to secure uniformity and finality in the administration of justice, not in the transactions of the market-place; as instructions to the judge, they are on precisely the same footing as the social or penal clauses wherein a specific fine or punishment is prescribed for each offence.

The most serious offences were those against the state and against the gods, which according to ancient views are really one and the same; in Mesopotamia the gods of a theocratic state were in fact the government, and amongst the Hittites, though the various local gods were not literally the city's rulers, yet an offence against the god involved the whole city or state in the god's displeasure. In this matter tradition was so unmistakable that there was little need for new legislation, and in the codes that we possess very few clauses deal with such things, but always the punishment is severe. In Egypt a palace conspiracy against the divine Pharaoh was naturally punished with death; as is known from the records of the prosecution of the plotters against Ramses III, a special court would be commissioned for the trial, and, as a royal concession, the criminals would be allowed to commit suicide. In Hammurabi's Code the thief who steals from temple or palace, and the receiver of such stolen goods, are both condemned to death. According to Hittite law, rebellion against the king involved the death of the rebel's whole family; the theft of the bronze spear set up at the gate of the palace was a capital offence because the spear symbolized the authority of the king; the theft of a field consecrated to the gods originally required the death of the thief, but in a later and a milder age atonement could be made by the sacrifice of an animal in place of the man. The practice of black magic is also a penal crime; logically

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so, for not only is it an offence against the gods but also it circumvents state action and defeats the law—'rebellion is as the sin of witchcraft', and because the two fall into the same category witchcraft deserves death; so Moses, and so Hammurabi; only the more humane Hittite law substituted a fine for the death sentence, and then only in the case of a freeman.

In civil cases the punishments for offences against the person are based on the *lex talionis* which was the common tradition of all Middle Eastern peoples. Because this was regarded as a private matter, the individual repaying hurt for hurt or avenging a kinsman's death by the rules of the blood-feud, the older codes had nothing to say on the subject; only when a society recognized the need of putting a check on such violence was the *lex talionis* embodied in the law. The Mosaic Code explicitly confirms the tradition, 'an eye for an eye and a tooth for a tooth', and Hammurabi does the like where the victim is of the upper class, an *amelu*, but ordains money compensation where he is of the lower order, a *mushkenu*, or a slave, while the Hebrew Code grants liberty to a slave whose eye or tooth has been put out by his master's violence. In the case of homicide both codes maintain the old rule that vengeance for murder is the duty of the dead man's next-of-kin,[16] not of the state, and the avenger is guiltless in the sight of the law; but both distinguish between deliberate murder and accidental killing, as when two men quarrel and fight and one is killed but the other can swear that he had no intention of killing, and by the Hebrew law the slayer can take sanctuary and by the Babylonian he can escape with a money payment. It can fairly be argued that the motive of the legislator in retaining the principle of retribution was restrictive rather than permissive; the injured party could not inflict a greater injury than he had received, and though the judge, if the matter came before him, was bound to make 'the punishment fit the crime' yet there was no objection to the case being compounded out of court on more civilized lines. What is really important from the point of view of the development of man's conception of law is that, with the sole exception of murder, crimes of violence against the person are removed from the sphere of private vengeance and are brought within the competence of the state.

The Hittite Code, which is certainly in part derived from the Babylonian, is, in the form in which we have it, some centuries later in date than Hammurabi's and reflects a different national tradition and character; but it shows a marked ethical advance. Only in one case is private revenge allowed—where a husband surprises his adulterous wife with her paramour *in flagrante delicto* (in the very act) and kills them on the spot, he is guiltless in the eyes of the law; it is the *crime passionnel* that may well be self-excused; but, if he does not so act at once, the moment for vengeance is passed and he must needs have recourse to the law. Even the blood-feud is abolished, though a concession is still made to ancient custom; the state arrests and tries the murderer, but when sentence is to be pronounced upon him the victim's next-of-kin (the 'avenger' under the old régime) decides it:

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'If he says "Let him die", he shall die; but if he says "Let him make restitution", he shall make restitution: the king shall have no say in it.' Throughout the Hittite Code 'retribution plays an inconspicuous part in comparison with the principle of restitution'. The only offences for which capital punishment is prescribed are defiance of the authority of the state, rape, and sexual intercourse with animals; and, in the case of a slave, defiance of his master's authority; and black magic; but even so the sentence of the court is not final but must be submitted to the king for his personal confirmation. This is in striking contrast to Hammurabi's Code, in which the death penalty is assigned for house-breaking, brigandage, rape, incest, causing abortion, faulty building that results in a fatal accident, black magic, kidnapping, the connivance at a slave's escape or the sheltering of a runaway slave, certain forms of theft and the receipt of stolen property. Bodily mutilation, which is not uncommon under the Babylonian system and becomes the normal punishment of the savage Assyrian Code, is confined by Hittite law to slaves, and then only for theft and arson; there is no use of the bastinado. Collective punishment is not inflicted except in the case of rebellion, already cited, and in cases of murder by a person or persons unknown when, if the crime occurs in the neighbourhood of a town or village, that community may be called upon to pay compensation. The law takes cognizance of intention, and of extenuating circumstances, as in its distinction between murder in cold blood, killing in the heat of a quarrel, and accidental homicide; thus, too, where a married woman has been raped 'in the mountains' her assailant is to be executed, but she is herself guiltless because it is presumed that only the loneliness of the spot prevented her cries for help from being heard; but if the assault took place in the woman's own house, where any outcry on her part would certainly have been overheard, she also must die as a consenting party. In this again there is an advance upon the ethical standard of the Babylonian Code; older Sumerian law, in defining the penalty for a blow dealt to a woman and causing abortion, did distinguish between the intentional blow and the accidental; but Hummarabi waives this distinction (paras. 208–14) and emphasizes only the social class of the sufferer.

For practically all offences committed by a freeman, whether crimes against the person or theft or damage to property, the Hittite law adopts the principle of restitution or compensation; retribution enters in only in so far as the offender may be required to pay several times the cost of the damage he has done. Even so the tendency is to mitigate the penalties, e.g. (para. 63) 'If anyone steals a plough-ox, formerly they used to give fifteen oxen, but now he gives ten oxen'; and such mitigation might be due to the direct action of the king (para. 25): 'If a man puts filth into a pot or tank, formerly they paid six shekels of silver; he who put in filth paid three shekels of silver [to the owner?] and into the palace they used to take three shekels of silver. But now the king has remitted the share of the palace; the one who puts in the filth pays three shekels of silver only.'



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There is no documentary evidence which would enable us to picture the legal principles and practices of the Far Eastern peoples. It would indeed be possible to argue back from later Chinese history to probable origins in the Shang or even in the Hsia periods, but such arguments would be subjective and of little value. Obviously the Shang people must have had a form of government and an apparatus of law such as is essential to any organized and urbanized community; but the oracle bones furnish no details regarding anything of the sort, and the sober historian can do no more than assert his belief that the Shang Dynasty, so far advanced in its material achievements, may well have anticipated much of the legal and moral system which he finds already established in China by the time when literature comes to his aid.

Confining ourselves therefore to the peoples of the Middle East, as being the only ones about whom we possess real knowledge, we find that in the course of the second millennium BC they had between them gone far towards evolving the conception of law which is that of the modern world. The steps forward were tentative and unco-ordinated; the actual provisions of their legal codes might still be primitive and even barbarous, according to the level to which civilization generally had attained; there could be retrogression as well as advance, that depending upon national character and the type of national government; no one people had grasped the theory of law as a whole, but more than one had contributed to that theory some essential element: that law has a moral basis and therefore a divine sanction; that it is the function of the state to assure by law the maintenance of order within the state, and fair play and straight dealing between its citizens; that the common interest must be reconciled with the rights of the individual; that the execution of justice is a matter for the state alone, not for the private citizen; and that in punishing crime the state will be actuated not by the spirit of revenge but by the need to make good the injury done by crime and so restore the balanced order of society. These are ideas which were alien to man in his savage state but at one moment or another were realized by the legislators of the second millennium.

## LAW COURTS

The efficacy of the legal codes naturally depended upon the administration of the law, upon the machinery of the law courts and the manner of its working, and this was far from uniform in the various countries of the Middle East.

### *The Hebrews*

In the case of the Hebrews the machinery of the law courts was non-existent. Down to the twelfth century—the limits of our enquiry in this volume—even the tribal system was scarcely operative; there was no central government and therefore no possibility of state control. The so-called 'Judges' were for the most part successful guerilla chiefs who, relying either upon their past achievements or upon a bodyguard of armed retainers,

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exercised a certain amount of control over a limited area and so might be called upon to maintain traditional rules of justice; but even where they might act as divinely favoured repertories of tribal custom they had little authority to enforce their decisions other than the brute force they could command. The task of keeping in existence the Mosaic Code of Law depended upon the heads of families; these might in cases of difficulty, where more than one family was involved, call in their neighbours to form a council of 'the elders of the congregation', but whether individually or collectively they were the sole executives 'every man did that which was right in his own eyes'. That in such circumstances the law was preserved in practice and in tradition was due to the fact that while it enshrined all that seemed essential in ancient family custom, it had been promulgated as the revealed Word of God, and only by apostatizing from his tribal faith could a man escape from the provisions of the Hebrew law.

*Egypt*

In Egypt, with its very different form of theocracy, all law emanated from and was subject to the will of the divine Pharaoh. There was no class of judges with exclusively legal duties; Pharaoh himself, with his two viziers, was in supreme control of the treasury and the judiciary alike, and therefore his officials of a lower grade represented him in both functions. In the time of the New Kingdom at least (and probably long before that, but information on the subject is sparse) the mayors or governors of the larger towns and the scribes and recorders of the smaller centres served as both the administrators and the judicial authorities of their districts. There were two 'Great Courts', one at Thebes and one at Heliopolis, presided over by the viziers of the South and the North respectively, and throughout the country there were local courts staffed by 'the great men of the town', the administrative officials of the district who were corporately empowered to try cases, and perhaps also by prominent residents co-opted by the officials; certainly the majority on the bench were priests. A man who lost his case in a local court had the right of appeal to the Great Court, and the final appeal was to Pharaoh himself as the ultimate source of law. In serious cases, as when the royal family was involved, Pharaoh might commission a special court, as was done by Pepi I in the Sixth Dynasty and by Ramses III in the Nineteenth, and might deny to the accused the right of appeal from such a court—'Ye shall go and examine them and cause those who should die to die by their own hand without my knowing it. And ye shall execute punishment upon the rest without my knowing it'; obviously Pharaoh here had prejudged the case and merely handed on to the royal commission the odium of passing judgement.[17]

All petitioners for civil redress had to submit their case in writing and, if possible, produce written documents in support of it; since all wills, contracts, tax payments, etc., were also recorded in writing and copies of them filed in the White House, the archive of the government treasury, it should have

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been easy, in most instances, to establish the truth; either side was free to produce witnesses who would give evidence under oath, and it would seem that all reasonable precautions were taken to secure the triumph of justice. Such certainly was the avowed aim of the government. Throughout Egyptian history justice is insisted upon. In such didactic writings as the Instructions of a king to his son Merikarê, the Instructions of Ptahhotep and the Instructions of King Amenemhet I, the advantage of just dealings are emphasized, and in the tomb inscriptions, especially those of the Middle Kingdom, the claim is constantly made that the dead man had honoured the rights of the poor; in the Eighteenth Dynasty the vizier Rekhmirê eloquently describes his own conception of the duties of his office—'Take heed that thou do all things according to what is in the law. Behold, men expect the doing of justice in the conduct of the Vizier. Behold the name given to the Vizier's chief scribe; Scribe of Justice is what he is called. As for the office in which thou givest audience there is a hall of judgement therein; and he who shall do justice before all men is the Vizier.'

Unfortunately, practice seems to have fallen far short of this lofty principle. Our knowledge of the actual working of the courts of law is based on very few documents, but all agree in painting a very sombre picture of juridical procedure. In criminal cases torture and mutilation were not only the punishment of the guilty (as in the Ramses III trial) but might be inflicted even on innocent witnesses as an incentive to truth-telling; thus in the Tomb Robbery trial before a special commission every witness was given a preliminary bastinado, whether he was suspected of complicity or not, and where he was suspected the treatment was worse: 'There was brought the scribe of the army, Ankhefenamun; he was examined by beating with the stick, the bastinado was given on his feet and on his hands; an oath was administered to him on pain of mutilation, not to speak falsehood. They said to him, "Tell the manner of your going to the places with your brother". He said, "Let a witness be brought to accuse me". He was again examined. He said, "I saw nothing". He was placed under arrest in order to be examined again.'

In civil cases, so far as we know, the evil lay not in the brutality of the court's methods but in its corruption. The Middle Kingdom story of 'the Eloquent Peasant' is simply that of a poor man who is robbed by an official and cannot get justice done; he appeals throughout to the high standard of impartial justice which one ought to expect from the Egyptian judiciary (actually the appeal is to Pharaoh, who has been apprised of the case but has ordered it to be dragged out so that he may have more of the man's amusing eloquence) and he never once attempts to prove his claim, which indeed has never been challenged, but is only concerned to persuade the steward presiding over the court to do his obvious duty. Thutmose III attempted to check the corruption of the local officials and of the inspectors sent out to investigate their corrupt dealings, but under the lax government of Akhenaton the bribery in the courts of law had become intolerable; so it was that when Harmhab set

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himself to 'improve the laws of Egypt' his task was not to reform the Code but to cleanse the administration of it. His edict ran, 'Now, as for any official or any priest concerning whom it shall be heard saying, "He sits to execute judgement among the council appointed for judgement and he commits a crime against justice therein", it shall be counted against him as a capital crime'. In spite of such severity it could happen that in the Harem Conspiracy trial of Ramses III's reign two of the judges appointed to the special commission let themselves be suborned by the accused. From the details of a civil action recorded in an inscription on the walls of the tomb of one Mes it is clear that Harmhab's reforms had had little effect. Mes was claiming an estate which had belonged to his family since the time of Aahmes I, the founder of the Eighteenth Dynasty, but as the result of a lawsuit had been seized from Mes's father, in the eighteenth year of Ramses II, by a certain Khay; Mes won his case on the grounds that not only were Khay's title-deeds forged but also there had been falsification of the land register at the time of the former trial. There is no doubt that corruption was so general as to nullify what may have been a just and a generous code of law; the ordinary Egyptian might well lose all hope of getting unbiased justice from the courts and in despair turn to the god Amon, 'the poor man's Vizier who does not accept the bribe of the guilty'.

*Sumer and Babylon*

In ancient Sumer the administration of justice was a prerogative of the priesthood.[18] It could indeed scarcely have been otherwise. When the city states were still largely independent and each was governed by a king (*lugal*) who was himself but the earthly representative of the city's patron god, or by a *patesi* (the term is variably read as *ishakku* or *ensī*) a 'prince-priest', the law courts, like everything else, were but a department of the divine government and would therefore naturally be directed by the god's servants; and further, since all land in theory, and a vast proportion of it in fact, belonged to the god, most economic questions would be of direct concern to him and would be regulated by his priests. The reforms introduced by Urukagina of Lagash show how easily the biased autocracy of the priesthood might be abused; but it is as representative of Ningirsu that the ruler introduces his reforms. When Sumer was unified under the powerful kings of the Third Dynasty of Ur the authority of the *ensī* inevitably declined, but they still kept the power of legal decision. The judges were still for the most part members of the priestly order, but it seems that they were no longer taken from that order at random but formed a specialized branch of it; the *mashkim* who under the Third Dynasty of Ur was present at all trials and was responsible for the judicial procedure most often belonged to the temple staff, and although men of this class were not, properly speaking, 'magistrates' they played the part of judge, arbitrator, notary, expert and jury. In accordance with tradition, cases were still heard in, or before the gate of, a temple and in the temple the judgements

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were filed; thus Bur-Sin, restoring at Ur the ancient gateway-shrine of the Ziggurat terrace, calls it 'the great collection of tablets' and 'the place of his judgements, the net which the enemy of Bur-Sin does not escape'. All kinds of civil cases, particularly those concerned with sales, came up before the *mashkim*; if he was incapable of deciding, professional judges (*di-Kud*) to the number of two or four were called in to assist him; an appeal from their decision might be made to the supreme court.

Even before the collapse of the Third Dynasty of Ur there had been introduced provincial courts of justice presided over by a civilian, the mayor of the town (*rabianu*) assisted by an assembly of notables (*shibuti*); we find Ibi-Sin of Ur addressing instructions to a court of the sort in the town of Bulum. Under the Semitic kings of Isin and Larsa the mayor became a more powerful person, and still more so under Hammurabi of Babylon. Hammurabi, who was not a god, as Shulgi of Ur had claimed to be, or even the representative of a god, was meticulously careful in religious matters but quite determined not to submit to priestly control, and it is in his reign that for the first time we see civil courts with secular judges in full power. Both the priestly and purely civil jurisdiction held good, but the ecclesiastical courts were being ousted and civilian judges were replacing the priests. From now onwards the regular court was that presided over by the local mayor with a bench of notables; whether they received any remuneration is not known, but they were reckoned as high officials entrusted with great responsibilities; if they revoked their decisions they were liable to be publicly deposed. At the trial both sides had to produce their 'tablets', the written deeds relating to the case; then the plaintiff and after him the defendant made their depositions; then the witnesses were sworn by the local god and by the king and gave their evidence, after which the judges gave their decision. Both parties to the case had the right of appeal to the upper court—'the Judges of Babylon'—and, if still dissatisfied, to the king himself. Instances of the royal interest in legal matters, appeals and re-trials, are common; sometimes it is clear that bribery was suspected or alleged; but although a certain amount of abuse of the system did indisputably occur (*v.* the Nuzu tablets) yet we find in Mesopotamia relatively little evidence of widespread corruption such as meets us in the literature of Egypt. But side by side with the manifest desire to do justice by a fair process of trial there is a shocking barbarity in the sentences prescribed by the law. The retention, in a few cases, of the ordeal by water is perhaps not unnatural considering that the courts were by origin religious courts; but freemen could be sold into slavery for debt, and for more serious offences the legal penalty might be mutilation or death by drowning, by burning or by impalement. The state avenges itself upon the individual by retribution of the most savage type.

### *The Hittites*

The actual laws of the Hittite empire seem in their form and to some extent

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in their content to have been based upon Hammurabi's edict, as indeed might be expected in view of the great influence exerted by Babylon upon the Anatolian Hittites through the intermediation of the Hurri (see p. 370). Owing to the almost total lack of private documents (Anatolia has produced nothing like the vast collection of business tablets unearthed on Mesopotamian sites) we know very little about the Hittite tribunals and law courts, but it would appear that these were not very different from the Babylonian model. In every provincial centre there was a popular court formed of the mayor and the city elders (or aldermen), and it may have been held competent to deal with minor cases such as are settled in the police courts of the modern world; but if not in all cases at least in those of any importance the bench of local authorities was reinforced by an official representing the king, normally the military commander of the local garrison. It is clear that his judicial functions formed a large part of the duties of this officer (whom it is tempting to compare with the *mashkim* of the Babylonian court) and the detailed instructions issued to him show that his responsibility was by no means a light one. He was expected to co-operate with the local authority, 'Now the commander of the garrison, the mayor and the elders, shall administer justice fairly, and the people shall bring their cases'; but since a would-be plaintiff might be frightened of bringing an action before a bench of purely local dignitaries who might be prejudiced against him, the commander was to give public notice that he was prepared to conduct any trial: 'Into whatever city you return, summon forth all the people of the city. Whoever has a suit, decide it for him and satisfy him. If the slave of a man, or the maidservant of a man . . . has a suit, decide it for them and satisfy them.' He was to see that the law was administered in the right spirit: 'Do not make the better case the worse or the worse case the better. Do what is just'; and to assure this his decision as president of the bench of magistrates seems to have been final: 'the commander shall decide the case fairly and satisfy him'. The mayor and the elders would seem to have been primarily consultants and assessors, but for the verdict they could if necessary be overridden by the king's representative, whose sentence had the royal authority behind it: 'If anyone oppose his judgement his head shall be cut off.' None the less there was an opportunity of appeal to the king, and all cases involving the death penalty and those of sorcery and certain types of theft had either to be referred to the king or the sentence submitted to him for confirmation; should anyone venture to oppose the king's judgement it counted as an act of rebellion, one of the few crimes for which collective punishment was prescribed, and the man's whole family could be put to death.

Proceedings in the courts seem to have opened with a statement of the case for the prosecution followed by statements for the defence given under oath and supported where possible by written documents; the accused was then confronted by the witnesses for the prosecution and was cross-examined in the light of their several charges. All the statements and the evidence were

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taken down *verbatim* by the clerks of the court, and it is from texts of this sort that we learn what little we know regarding Hittite legal procedure; it is clear that the cross-examination was fairly conducted and that the accused was allowed complete freedom of speech. As Dr Gurney puts it, 'An outstanding feature of Hittite legal procedure is the immense trouble taken to ascertain the facts. We possess highly detailed minutes of courts of enquiry in cases of peculation and neglect of duty, which are unique in the literature of oriental peoples and have quite a modern ring. . . . The text shows a spirit of careful and unbiased investigation which may perhaps be taken as typical of Hittite administration as a whole.'

*Summary*

From the brief sketch given above of those civilizations which are best known to us it should be possible to estimate the progress made during the Bronze Age in the conception and administration of law. Egypt shows us that static[19] spirit which in a greater or a lesser degree characterizes her whole culture, and even the suggestion of advance that some writers detect in the Middle Kingdom texts is stifled by the rank growth of corruption. In Sumer the theory of theocratic government together with the recognition of the family as the basis of the state did give rise to an ideal of 'justice' as a condition of social life, but the Sumerian priesthood who administered justice never advanced far beyond the primitive insistence on retribution, and this was to receive the whole-hearted sanction of Babylonian law. Thus Libit-Ishtar of Isin seems to have substituted a money payment for the old death penalty in the case of certain offences such as the harbouring of runaway slaves; but Hammurabi, here as elsewhere, reasserts the severity of the retributive principle, and this later became the substance of the savage code of Assyria. In the theory of law a great step forward was taken by the Hebrews when they founded their code upon religion and morality; although the time had not yet come when the law could be put into practice by the machinery of an organized state, yet its 'statutes and judgements' were to remain valid for the later kingdom. In practice it would appear that the Hittites of Anatolia had evolved a system unique in the ancient world, progressively more and more conscious of individual rights and interest, and approaching in spirit the ideals of modern legislation. It is true that at the close of our period the Hittite state was to be swept utterly out of existence and its laws and customs to disappear from the land in which they had been developed; but even so their contribution to man's moral progress may not have been fruitless. Not only through the Syro-Hittite cities which were to perpetuate south of the Taurus range the civilization of Hattusas but also through the Achaean people with whom Hittites had long been in touch, there may have been handed down to after ages something of the liberal conception of law which we see in the 'Code of Suppiluliuma'.

The standards reached by the three principal nations whom we have

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considered differ so markedly that one is tempted to seek a reason for their disparity. It was not, of course, a question of race. The theory that a race as such should possess innate virtues and qualities superior to those of other races—the Greek theory of the φύσει δοῦλος, the 'national slave' on the one hand and that of the 'Nordic' *Übermensch* on the other—is by general admission absurd; the distinctive characteristics of a people result from the influence brought to bear upon them by the circumstances, the conditions of life, of their ancestors and of themselves. Egypt can be explained by the inertia of an agricultural people dominated by a divine Pharaoh and an unscrupulous priesthood.[20] The Sumerians, combining agriculture with an extensive trade, with manufacture and, in the early days, with a good deal of military service, developed a civic spirit which would demand justice and fair dealing for all; at the same time the theocratic basis of the city state, which made a social offence a sin against the city's god and set the seal of divine approval on retribution, was enough to prevent the humanizing of the primitive code. The Hittites, warriors establishing themselves by force in a strange land, would have to combine the fighter's individualism and love of independence with the disciplined solidarity required for the colony's defence and, as the different tribes bound themselves into an alliance, with mutual concessions to varying points of view; moreover, they were ruled neither by a god nor by an autocrat but by a monarch who, up to the time of Telepinus, i.e. throughout most of Hittite history, was an elected, not a hereditary ruler. When they absorbed, as they readily did, as much as seemed to them good of a higher civilization evolved by their neighbours, they still preserved that balance between the rights of the individual and his duties to the state which gives to their legal code something of the character of democratic law.

## INTERNATIONAL LAW

In the history of the progress of civilization, not in any one country in particular but of mankind in general, emphasis must needs be laid on the contacts between the various peoples which fertilized man's imagination, spread new ideas and new techniques, and by the exchange of regional products enriched the resources of the ancient world. Such contacts could be warlike or peaceful. War in itself is, by reason of man's nature, a relatively simple matter, but the utilization of war for long-term profit demands organization and discipline; peaceful relations such as make possible trade between lands under different governments are far more difficult to establish and maintain and require something in the nature of international law.

In the second millennium BC, as in much later times, no ruler could admit that a declaration of war on his part was due to his private whim or personal ambition. War was a matter for the gods, and it was the god of his country that declared war on the god of the other. The king, in this as in all other cases, was but the mortal agent, the instrument of the divine will; his victories

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were the god's victories, and if he was defeated it was because, in the council of the gods, his own patron deity had consented to the general decision that 'kingship' should be transferred to the god of another city or country. The Egyptian Pharaoh, being himself a god, could not accept defeat, and any military reverse had to be represented as a triumph;[21] but, even for him, victory had to be attributed to the greater god of his worship, and the result of a successful campaign was to add new provinces not to his own possessions but to the empire of Amon-Rê. For the Sumerian there was no doubt as to the god's responsibility; when Lugal-zaggisi overcame King Urukagina and laid waste his city Lagash, the poet who bewails the destruction of the temples and the plundering of their treasuries exonerates Urakagina of all blame: 'of sin on his part there is none'; but no more does he blame the mortal enemy: 'but as for Lugal-zaggisi, *ensī* of Umma, may his goddess Nidaba bear this sin upon her head'. So, too, Hammurabi of Babylon says that 'encouraged by an oracle given by Anu and Enlil, who are advancing in front of his army', he defeated Rim-Sin of Larsa, and 'upon the command of Anu and Enlil' he destroyed the walls of Mari. To Zimri-Lim, the king of Mari, whom Hammurabi defeated on this occasion, there had come a warning from Adad, the god of the city Kallasu: 'Am I not Adad, who restored him to the throne of his father's house? I am the lord of the throne, of the territory and of the city, and what I have given I can take away.' War was indeed, like the ordeal by battle, the judgement of the gods; as Mursilis the Hittite said to the king of Arzawa, 'Now we will fight each other, and the Weather-god, my Lord, shall judge our judgement'. A victorious god might even carry off his victim into captivity, as when the statue of Marduk was taken from Babylon by Mursilis and imprisoned at Hana, or as when the Philistines laid the Ark of Jehovah before the cult image of Dagon; and the dominions of the vanquished deity passed into the hands of his conqueror.

A mere raid, like that of Mursilis against Babylon, would but enrich with booty the temple, and the palace, of the invading ruler. More often victory in war meant that he would impose his suzerainty upon the conquered; either he would set his own nominee upon the provincial throne or he would force the ex-enemy prince to sign a treaty acknowledging vassalage.

### *Vassalage*

The position of a vassal prince was clearly defined by rule and precedent. He had to pay an annual tribute, sometimes bringing it in person to the court of his suzerain. All questions of foreign policy were reserved to his overlord. He was bound to assist the overlord with all his armed forces for any military operation, offensive or defensive. He was bound to hand over to his overlord any criminals or fugitives from justice who were native to the latter's territories. His own subjects had the right of appeal from the provincial courts to the supreme court of the overlord. In the event of disputes between vassals the overlord acted as mediator and arbiter; thus when two vassal princes

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quarrelled Zimri-Lim of Mari writes, 'Qarni-Lim and Hammurabi of Kurda shall swear an oath by the life of the gods, and I will cause friendship to be established between them'; and again, when his vassal Arriwaz raided the principality of Asqur-Adad, he writes, 'Now Asqur-Adad is residing with me. You have raided his country. Everything that you took, gather it together and return it.'

No ruler or state would submit cheerfully to this subordination, and the suzerain was at pains to secure their loyalty either by force or by the gilding of their fetters. The method especially favoured by the Pharaohs in their Syrian empire was to set an Egyptian commissioner in the court of the vassal prince, backed, if necessary, by a resident garrison of Egyptian troops.[22] The overlord might flatter his vassal by giving to him in marriage a daughter of his house or at least a palace girl who could pass for his daughter; the Asqur-Adad mentioned above when submitting to Zimri-Lim ('seizing the hem of his garment') pleaded, 'Let him send his daughter and exercise kingship over Karanâ'; and in like fashion Solomon of Jerusalem was given a 'daughter' of Pharaoh for his wife. But in the end it was only the overwhelming strength of the suzerain that guaranteed the vassal's submission. Any obvious weakness in the central government, or the rise of any other power strong enough to menace that government, meant the break-up of the empire. The Tell el Amarna letters give a vivid picture of the gradual defection of Egypt's Syrian vassal states under the nerveless rule of Akhenaton. The death of Suppiluliuma, who had extended the Hittite empire to its widest limits and long held it grimly in check, coinciding as it did with a pestilence which was decimating the population of Hattusas, was the signal for a general revolt of the vassal princes as well as for the disaffection of the federal states. The rise of the Mitanni power was marked by the submission to their suzerainty of one small state after another, vassals of the Hittites or of Egypt, for whom loyalty to their far-off overlords was outweighed by the immediate threat of the formidable upstart. Changes, therefore, were apt to be kaleidoscopic, pieces regrouping themselves with every shift in the balance of power. 'Ten or fifteen kings will follow Hammurabi, King of Babylon, as many will follow Rim-Sin, King of Larsa, as many Ibal-pi-el, King of Eshnunak, as many Amût-pi-el, King of Qatanum; twenty kings will follow Yarim-Lim, King of Yamkhad'; thus a military intelligence agent reported soon after 1780 BC. The news was really important, because a few years before the list would have been very different, and a few years later Rim-Sin was a dethroned fugitive, or dead, the dynasty of Yamkhad had fallen, and Qatanum had sunk to a position of vassalage.

### *Independent States*

Relations between independent rulers (apart from wars of conquest) envisaged two principal objects, security and trade. Commercial prosperity required peaceful conditions, and peace could be secured only by mutual agreement. In an age in which the strong man was a law to himself it would

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have been the height of folly to trust to the mere forbearance of a powerful neighbour, to assume that either moral scruples or enlightened self-interest would force him to recognize the rights of others if those seemed to stand in the way of his immediate interests. There had to be a definite and a detailed bond, strengthened by sanctions which no one could lightly disregard. The independent states, therefore, when not at war with each other, were normally assured by a network of formal treaties of alliance.

In international as in private law a contract had to be set down in writing, and it had to be sworn to by the parties concerned in the presence of divine witnesses. In the case of a treaty of alliance preliminary negotiations were carried on by ambassadors exchanged between the two contracting powers; each party would have drawn up his own draft version of the text, and the duty of the ambassadors was to reconcile those in the final version; any important disagreement they would refer to their principals; thus Shamshi-Adad of Assyria receives from his envoy a copy of a proposed treaty with Eshnunna as drafted by the other side and at once objects: 'The matter which I removed from the tablet is still there. The men of Eshnunna are making difficulties.' In other cases the ambassadors were plenipotentiaries and arranged a satisfactory text between themselves, after which the date of ratification had to be fixed, a date not only convenient to both rulers but also approved by oracles as auspicious.

The ratification was a solemn function introduced by sacrifice. While the treaty was made out in the names of the kings who were to be bound by it, and was introduced by their full names and titles, no small part of its text consisted of a list of the gods and goddesses invoked as witnesses, the deities of each country separately described, followed by the curses which devolve upon the violator of the contract: 'He who shall not observe all these words written upon this silver tablet of the land of the Hatti and of the land of Egypt, may the thousand gods of the land of the Hatti and the thousand gods of the land of Egypt destroy his house, his country and his servants', and the corresponding blessings: 'but he who shall keep these words which are on the tablet of silver, whether he be Hittite or Egyptian, and shall not neglect them, may the thousand gods of the land of the Hatti and the thousand gods of the land of Egypt make him to be in good health and long life, as also his houses, his country and his servants'. It was an oath of the most solemn sort, so much so that the ceremony of signature was, by Babylonians and Syrians, called 'the touching of the throat', for when the sacrificial victim was killed, the king, in the presence of the gods and of the ambassador of the other contracting power, drew his hand across his throat, symbolizing his willingness to die in the same manner if he broke his word. The treaty tablets, once signed, were laid before the state gods of the two countries.

The most full and elaborate treaty of which the text is extant is that concluded between Ramses II and Hattusilis, from which come the sanctions quoted above, but others are generally of much the same pattern. The first

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clause would be a promise of perpetual friendship and 'brotherhood' between the contracting parties and an undertaking to observe territorial integrity. This would be followed by an alliance which might be purely defensive, each side promising to come to the other's help in the event of invasion by a third power or of rebellion by the subjects of the overlord; such were the terms of the Hattusilis-Ramses treaty: 'If some other enemy comes against Egypt and if Ramses, King of Egypt, thy brother, sends word to Hattusilis, King of the land of Hatti, his brother, "Come to my aid against him", forthwith Hattusilis, King of the land of Hatti, shall send his soldiers and his chariots and shall slay my enemy', with, of course, the reciprocal promise. The defensive alliance was indeed the more usual between independent rulers, but sometimes the offensive alliance which was obligatory where vassals were concerned ('He shall be the friend of my friend and the enemy of my enemy') was concluded also between equals; in special circumstances a neutrality clause was introduced, as when both parties agree to hold aloof from a quarrel between other states, intervention in which would mean their taking opposite sides.

Great importance was attached to the right of extradition. Not only criminals, but political offenders and fugitives of all sorts were to be handed back to the country of origin. In vassal treaties this was a unilateral obligation and did not apply to the suzerain, who might be interested in protecting even a pretender to the throne of a doubtfully loyal subject; a familiar example of this is the case of Jeroboam, who conspired against Solomon of Jerusalem, took sanctuary with Pharaoh, and was subsequently installed as king over Israel. Perhaps for that very reason treaties between equals insist strongly upon the mutual right and, at the same time, the contracting parties were most careful to be sure of their grounds before taking action; thus Aplakhanda of Carchemish when asked to return a palace girl who had been carried off by a raiding-party and was said to be in the hands of a man named Tappî-Il, replied to the ruler of Mari, 'Send word to me as to where she was seized, who seized her and who brought her here, the name of the girl and of the place where she was seized'. Always, in the Middle East, the fugitive has been able to find sanctuary by putting himself under the protection of anyone, even a total stranger, who is thereafter bound to defend him and cannot honourably hand him over even to lawful justice; it is, therefore, interesting to find that in the second millennium BC international law was able to override the traditions of individual morality. But that the contradiction was recognized and the strength of the moral claim not undervalued is shown by a remarkable compromise in the Hittite-Egyptian treaty; it comes at the end of the document as if added as an amendment to the normal extradition clauses: 'If a man flees from Egypt, or two or three, and they come to the great chief of the Hatti, the great chief of the Hatti shall seize them and have them handed back to Ramses, the great ruler of Egypt. But as regards the man who is handed back to Ramses, the great ruler of Egypt, his fault shall not be brought against him; his house, his womenfolk and his children shall not be

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destroyed, he shall not be killed nor maimed in his eyes, his ears, his mouth or his limbs, nor shall any charge be preferred against him.' This insistence on a personal amnesty for the surrendered fugutive, subordinating as it does political expediency to conscience, is perhaps without a parallel in the international relations of the ancient world.

Special rules are laid down for the arrest and return of runaway slaves. In this case it was not the government that was directly concerned, but the private citizen; accordingly, the slave's owner had to prove his case and pay a fixed reward to anyone who had caught the fugitive. Inter-territorial theft was dealt with in the same manner. Bandits raiding across the frontier were to be arrested by the authorities of the raided country, but 'You shall surely not detain them within your territory but must return them to my territory'; no ruler was prepared to surrender the right to try his own nationals.

A treaty of alliance was often strengthened by a dynastic marriage, and this would be the occasion for an exchange of gifts on a scale very much larger than would be called for in the case of a private marriage; thus for the betrothal of Ammitaku of Alalakh to the daughter of the prince of Apišal the expenditure amounted to seven hundred shekels of silver while for a private person the maximum would have been forty shekels. Between allies letters and gifts were exchanged regularly as a proof of friendship, but the transaction was of a businesslike sort, each side expecting to receive full value in return for what he had sent. The king of Babylon is perfectly frank on the point when, writing to Akhenaton of Egypt, he says, 'Your messengers have come three times and you have sent no fine present; and I, too, have sent no fine present to you. I have nothing valuable to send if you have nothing valuable to send'; and Iškhi-Adad of Qatanum who, at Išme-Dagan's request, had sent him two horses and received in return twenty *minas* of lead, writes complaining bitterly, 'Did you not receive from me without discussion and in its entirety? And you send me this miserable amount of lead!'

While special messengers bearing letters or gifts journeyed frequently to and fro between allied kings, there were also resident ambassadors through whose hands such things would pass. These were men of high rank who could be trusted to use their own discretion in most negotiations with the ruler to whom they were accredited; thus Ibâl-pî-El, ambassador of Zimri-Lim of Mari at the court of Babylon, boasts that, 'Whenever Hammurabi is turning over a matter in his heart he sends word to me and wherever I am I go to him. Whatever the matter that he is turning over in his heart he tells me of it.' The ambassador by frequent dispatches kept his master informed on all matters of interest, especially those of military importance; he dealt also with legal cases involving citizens of the two countries, and he arranged the exchange of royal gifts. There was thus a continual traffic of envoys between the courts; these travelled under the escort of a native of the area through which they passed (a method of assurance employed up to the present day in Arab lands, where the *rafîk* is a recognized institution), and the refusal by a

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ruler to provide such a safeguard was a breach of international courtesy and a deliberate insult to the other party. Commercial caravans would be glad to attach themselves to a royal mission, thereby profiting by its safe-conduct, and sometimes, at least, the envoys themselves carried merchandise for trade; thus the equipment of messengers going from Assyria to Telmun includes juniper seed and boxwood, which are not things likely to be needed on the road, and when Aplakhanda of Carchemish writes to Yasmah-Adad of Mari: 'This mission is mine. Let them not speak of the tax to my attendants', he is claiming exemption from customs dues on goods presumably intended for sale. Burnaburiash of Babylon claims a direct interest in a merchants' caravan carrying gold which had been plundered by brigands in Palestine, and he points out to Akhenaton, under whose feeble rule the outrage had occurred, that unless the criminals are arrested and executed trade between Babylonia and Egypt will come to an end; similarly Kadashman-Enlil of Babylon explains to Hattusilis that communications with the Hittite capital had been cut because the king of Assyria was refusing safe passage through his territory.

Obviously open war, political tension and the weakness of the central government in policing its provinces might close the roads to merchants and messengers alike; but for the most part common interest saw to it that commercial and political contacts should be maintained between the states. When it is remembered that, so far from there being any one supreme authority such as controlled the Middle East in Roman or in Islamic times, Egypt and Syria, Anatolia and Mesopotamia presented a mosaic of major and minor kingdoms with all their differences of culture and creed, their jealousies and ambitions, the tolerance that made possible international trade and international diplomacy is indeed surprising. There was, of course, no formulated international law, only recognized conventions, the origin of which must be sought in the internal laws of Babylonia. The Akkadian and Sumerian empires of the past had brought most of Syria and even parts of Anatolia under a common rule and a common law and had started a precedent which was to influence the Middle East long after those empires had fallen. The Akkadian language, written in the cuneiform script, was the diplomatic language employed even by the chancellery of Egypt; the regulations that governed Sumerian trade were adopted by independent kingdoms; actually we find in treaties of the second millennium BC expressions taken *verbatim* from those in a treaty of Naram-Sin of Akkad in the twenty-fourth century BC. On this measure of common ground there was built up a diplomatic apparatus which anticipates in many respects that of the modern world.

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## AUTHOR'S NOTE

(*to Note 1, p.* 510)

My Russian commentators, to whose help I am indebted, have urged that my readers should be acquainted with the different views existent among modern scholars on the important question of the process of development of mankind and, especially, with the point of view of Marxist philosophy, which directly opposes the theory that 'human history is no more than a kaleidoscopic change of whimsical patterns with no inner consistency and no principle in their development'.

'According to our view,' they say, 'the first stage in the history of humanity is primitive communal, or pre-class, society, characterized by communal property in land and mostly also in other means of production, by the organization of the population in clans, tribes and other communities mostly based on a real or supposed blood affinity, by the absence of a constant division of labour between artisans and land cultivators within the community and by the absence of a state apparatus, the chiefs of the clans being only the more experienced and revered of the tillers, hunters or whatever the members of the community may be, and the authority of the chiefs being based on the necessity of voluntary community discipline.

'The next stage in the history of mankind is represented by the early "urban civilization"; it is characterized by the growth of private property, by the division of society into classes, by the creation of the state which enables a part of the population to live on the produce of the other part, i.e. it is characterized by the exploitation of one individual by another. The exploiters tend to make the most of the labour of the exploited; and thus the complete proprietorship of the slaveholder over the workman who is turned into a slave becomes now the optimal form of exploitation enabling the owner to acquire not only all the surplus product of the slave but also part of the product necessary to the latter's maintenance. Other types of exploitation exist side by side with slave-owning. We usually term this stage of history "slave-holding society". A great part or even the majority of the population remain in this period personally free and retain their organization in the form of different, more or less self-ruling, communities—rural or urban. City life and writing are characteristic of this period. Communal property in land is no longer the general rule.

'With the development of technical knowledge, with the improvement of tools and means of production, the slave is no longer the optimal type of the exploited worker; a new type of worker with more interest in the effectiveness of his work, and with more initiative, is needed; on the other hand, the formerly free land cultivator becomes now dependent on the big owners of landed property, and thus the third, "feudal" stage of society commences.

'The historical facts depicted in this book are in accord with the historical process as outlined above. Our outline gives, of course, only the general trend of historical development, which presupposes different local varieties following from the specific conditions of time and place. But, according to our view, only such a conception of the historical process allows of a correct interpretation of the facts. If the author could group the facts according to a system which follows from the successive development of primitive communal and slaveholding structures of society, the facts would also be more easily grasped by the reader.'

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Since the whole purpose of this book is to trace man's progress it obviously does not regard history as a 'kaleidoscopic change of whimsical patterns'; but none the less do I find it impossible to fit the stages of progress in general to the Procrustean bed of what my Marxist friends term 'the law of social development'. In my view 'the different local varieties following from the specific conditions of time and place' rule out any such conformity. Were the historical facts grouped according to a theory of the successive development of primitive communal and slave-holding structures of society those facts might be more easily grasped, but the history would be misrepresented. Slavery was, of course, a usual feature of ancient society, but in the different societies the importance of the part played by it varied very greatly; thus, in Egypt, civilization attained its zenith in the Sixth Dynasty, but not until the Eighteenth Dynasty did the institution become a considerable element of Egyptian society; there is no evidence to show that the civilization of the city states of Tyre and Sidon was based on slave ownership. Again, the 'law of social development' whereby a 'feudal' stage results from slavery with the development of technical knowledge cannot be of universal application, if only because not all ancient civilizations passed through the feudal stage. The Marxist view seems to me to lay upon slavery a quite unwarranted emphasis. That there was, in the early urban civilization, exploitation of one individual by another can reasonably be said, as it can of every other phase of human existence; but that is an accidental, not an essential feature. When it is urged that in that period 'the richer proprietors, the professional rulers, the priests, the merchants, concentrating in the towns which were mostly transformed into walled cities, could now by virtue of their greater opportunities create a governing apparatus to enforce and keep up the conditions which enabled them to live on the surplus production of the entire population', this is an *ex parte* judgement. The governing apparatus did indeed aim at maintaining and perpetuating the existence of the state, and the governing class did not itself produce food with its own hands; but for an organized society the function of the governing class was, and was generally recognized to be, as essential as that of the farm labourer, and the smooth running of the state and its defence against external enemies was in the interest of all classes alike.

In this chapter the subject of slavery is discussed at some length and in considerable detail. That at some times and in some countries society was based on the slave system is made clear; but I have purposely avoided the use of the term 'slave-holding society' because I wished to avoid that term's implications: the detailed discussion will perhaps justify me, but it was written objectively and not in support of any theory.

Professor I. M. Diakonoff, having read the above discussion, asked for the following rejoinder to be added:

'Sir Leonard Woolley seems to have misunderstood me when arguing that "not all ancient civilizations passed through the feudal stage". In my opinion *no* ancient civilization had reached the feudal stage (in the Marxist sense of the word "feudal" as quoted by Sir Leonard above). Defence against external enemies was necessary in pre-urban (or pre-class) society also, but the pre-class tribes were not ruled by a state. A class division was no doubt necessary for the progress of society in ancient times, but nevertheless, in those times as well as in all others, no one would drudge in order to ensure a safe and prosperous life for the governing class, unless forced to do so, be the governing class ever so important for the progress of civilization.

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The state is necessary for the "smooth running" of class-society, not because it defends society against external enemies.'

## NOTES TO CHAPTER III

1. cf. Author's note at end of chapter, pp. 508–9.
2. In face of objections raised on this point Sir Leonard Woolley recognized that writing originated for book-keeping, primarily for the accounts at temple stores. It was therefore a temple invention, but certainly did not originate as a religious function.
3. The history of the English word 'boor' and the Latin word *paganus* shows how generally true this was.
4. In reality the High Priest of Amon did not administer the Egyptian clergy as a whole. There was a 'Director of Priests of all the Gods of Upper and Lower Egypt' who was an actual minister of worship rather than sovereign pontiff of Egyptian religion [cf. G. Lefebvre, *Histoire des grands prêtres d'Amon de Karnak* (Paris, 1925), p. 78; and E. Drioton, *Journal des Savants* (1930), p. 321]. Moreover, the priests of other gods such as Rê at Heliopolis, Ptah at Memphis and Thot at Hermopolis also had their own political aims and pretensions, and even, on occasion, their own triumphs. See H. Kees, *Das Priestertum im aegyptischen Staat vom Neuen Reich bis zur Spätzeit* (Leiden-Köln, 1953).
5. As Professor John A. Wilson points out the Semneh dispatches of the Middle Kingdom show that the Sudanese (Madjoi) came to the Egyptian frontier post to *enlist* in the Egyptian army. The Brooklyn Papyrus edited by W. C. Hayes, *A Papyrus of the Late Middle Kingdom in the Brooklyn Museum* (Brooklyn, 1955), shows that in the Late Middle Kingdom Asiatic slaves were used as weavers, brewers, and other household slaves. W. C. Hayes believes that they were not captives, but acquired through a slave-traffic.
6. This statement has been challenged by Professor I. M. Diakonoff who says:

   'This is not so; cf. clauses 11 and 12 of the Hittite laws: "if anyone breaks the arm or leg of a freeman, he must give him 20 half-shekels of silver . . . if anyone breaks the arm or leg of a slave or a slave-girl, he must give 10 half-shekels of silver"—obviously to his master.'

   This is a gloss for which Sir Leonard Woolley can see no justification—the text of the law says nothing about the master; the only thing emphasized is the different rate of compensation.

   Professor Diakonoff goes on to say, 'The cause of the slave being fined for his offence only half of the amount imposed on a freeman for a similar offence is also obviously the fact that the fine would in most cases be paid by the master. The lawgiver could not think it fair to punish the master for the crime of his slave in the same way as he would be punished for his own crime.'

   An equally obvious interpretation is that because the slave was a much less valuable member of the society than the freeman, injury to him was assessed at only half the price of that of the freeman; because he had at most very limited means, the half-fine imposed upon him for an offence would be as severe a punishment as the whole fine imposed on the freeman; but that the fine was imposed on the slave, not on his master, is surely shown by the fact of bodily mutilation being the punishment for certain heinous crimes —it was the guilty slave, not his master, who was mutilated, and the same principle of law would hold good in the case of a money fine.

   Sir Leonard Woolley's contention that the civil rights of the slave were protected by the law is challenged on the grounds that 'Clause 1 of the Hittite law runs: "If anyone kills a man or a woman in a brawl he must bury him and give four 'heads', men or women. . . ." Thus', it is urged, 'the freeman, if he was rich enough, could pay for his offence with his slaves and went free himself. If he was poor, the "heads" probably included his wife and children or himself. How can we say in view of this that the civil rights of the slave were protected?'

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For Sir Leonard Woolley, however, the 'giving of a head' does not mean, as these commentators imply, that the victims were killed; this indeed would be against the whole spirit of Hittite law, which would not condone the exaction of four lives for one; the four people were handed over as slaves to the kin of the murdered man, i.e. retribution was combined with compensation. And the law does discriminate between slaves and freemen. Those handed over would certainly be slaves already, if the offender was a rich man (in which case he was mulcted of the value of four slaves); and if he were a poor man he would pay with his own liberty and that of his family; to the law, that was a matter of indifference.

Considering the rejoinder of Sir Leonard Woolley, Professor I. M. Diakonoff added: 'There seems to be a misunderstanding. What I stressed was the fact that, in the case of the freeman, the culprit had to pay *him*, while in the case of a slave the pronoun *him* is not used—obviously because, as in other slave-holding countries, the fine was paid to the master. A slave might be mutilated for a crime, but that does not prove that he had money of his own, which did not belong to his master.'

The above gloss could not, of course, be examined by Sir Leonard Woolley, and it is printed here at the request of Professor A. A. Zvorikine, Member of the Bureau of the International Commission for a History of the Scientific and Cultural Development of Mankind.

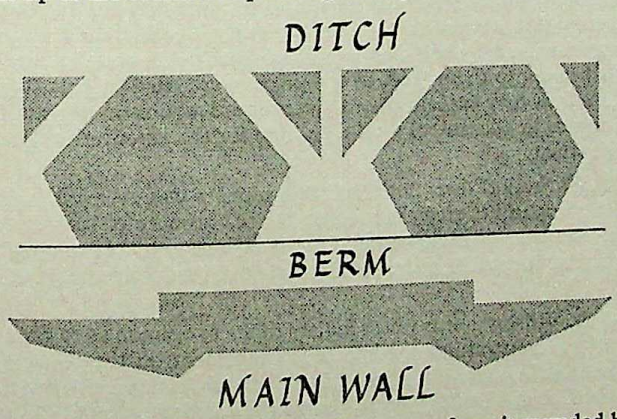
7. In the second millennium it is *awîlum*; *amelu* is a later form. In the view of Professor I. M. Diakonoff, he was not a nobleman (or a member of the gentry), but a freeman enjoying full citizen's rights.

8. Professor I. M. Diakonoff does not think it was only the recruiting officers who were on a permanent footing and were granted what the author calls 'fiefs' by the state; in his view it applies in general to the permanent part of the army, which was the nucleus of the armed forces.

9. In the view of Professor I. M. Diakonoff, the armed forces of the *ens-s* consisted of temple personnel, not of citizens.

10. The defences of Buhen, the frontier fortress at the First Cataract (opposite Halfa) illustrate the extent to which the Egyptian commanders of the Twelfth Dynasty relied upon archery.

The wall proper, some 31 feet thick and at least 33 feet high, had in front of it a flat berm and then a rock-cut ditch about 19 feet deep beyond which was a curtain wall set back from the lip of the counterscarp. Along the top of the scarp ran a brick wall leaving




a manœuvring passage between it and the wall proper; from it rounded bastions at intervals projected into the ditch; these bastions had a double range and the wall-stretches between them a single range of embrasures each having three divergent loop-holes intended to give the widest possible field of fire; in the bastions the embrasures arranged in a double line were for kneeling and standing archers respectively, who could pour in a flanking fire on any enemy who had broken through the counterscarp wall and climbed down into the ditch; the whole defence was organized for the use of bowmen.

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It is worth noting, however, that Buhen was stormed and destroyed after the time of the Twelfth Dynasty; see W. B. Emery in *Illustrated London News* (June 21, 1958), pp. 1048–51, Fig. 12, and (September 12, 1959), pp. 232–3, 249–51; *Kush*, VII (Khartoum, 1959), pp. 7–14, Fig. 6, phot. Pl. 9, 2 plans.

11. Professor I. M. Diakonoff does not think it admissible to say that the Hittite laws or even the laws of Hammurabi serve the interest of the poor and the slaves; the laws of a state always serve the interest of a ruling class.

12. *Cambridge Ancient History*, II, p. 210.

13. The vizier's instructions are known not as official documents proper, but as private inscriptions engraved on several Eighteenth Dynasty tombs, including that of the celebrated Rekhmirê. These bear witness to an earlier tradition, since they derive from some unknown original of the Middle Empire (in all probability dating from the Thirteenth Dynasty, but referring to Twelfth Dynasty affairs); see W. Helck, *Zur Verwaltung des Mittleren und Neuen Reichs* (1958), pp. 2, n. 1, 29–43.

14. Sir Leonard Woolley was, of course, well aware that many scholars have refused to accept Moses as an historical personage, but did not consider it useful to enter here into so vexed a question. The earliest Hebrew laws must have been enunciated by someone, and whether that someone was Moses or 'another person bearing the same name' matters very little. Sir Leonard Woolley uses the name for convenience, and with reference only to those clauses of the Hebrew law which by the common consent of scholars go back to an early stage in the history of the Hebrew people. This excludes the innumerable enactments which were added in later times, after the settlement in Palestine, but were piously fathered upon Moses so as to give them the authority of the first lawgiver. See also p. 761, n. 40.

15. The charge-fixing clauses have caused much difficulty to commentators. The explanation often given that they are 'maximal tariffs' disregards the fact that the charges recorded in business tablets are nearly always considerably higher; moreover, in the numerous known cases the judges never refer to the laws and often give judgements at variance with them. That the law fixes the rates to be paid by the palace and the temples (as distinct from individuals) seems also to be inconsistent with the evidence of the tablets. Dr W. F. Leemans is in general agreement with the explanation given in the text by Sir Leonard Woolley: 'When immovable property was sold the price was paid on the spot; disputes about the price could not arise afterwards. But when a workman or cattle were hired, or a ship handed over for repair, no document had to be drawn up; often, no price would be fixed in advance trusting that the right price would be paid. . . . In these instances the prices fixed by the king may have been valid, and if a case came before the judges they had to apply them. But, as the prices were fixed by law, there was no use in going to law, and this may explain why no records of lawsuits on this subject are known to us.' In short, the code guarantees a minimal rate for the labourer or hirer not protected by a formal contract.

16. Professor I. M. Diakonoff does not think that murder was avenged in Babylonia by the family of the victim; in his view, the reason for the absence of laws against simple theft and murder in the laws of Hammurabi is that Hammurabi's laws were innovations; in cases that needed no innovations the customary law of the communities probably remained in force.

17. As Professor J. A. Wilson points out, scholars differ in opinion as to the circumstances of the meeting of the court summoned to pass judgement on the 'Harem' conspiracy. A reconstitution of this legal case has been possible thanks to three papyri: the legal papyrus of Turin and the Lee and Rollin papyri, both originally forming part of the same papyrus. Many think that the conspiracy succeeded, and it is out of the realm of the dead, and through the agency of his son, that Ramses III commissioned the court; in that case his disavowal of knowledge and responsibility is understandable as coming from the realm of the blessed. A number of scholars, on the other hand [see A. De Buck, *Journal of Egyptian Archaeology*, Vol. XXIII (1937), pp. 152 sq.] are of the opinion that Ramses III survived for a short period after the discovery of the plot and was still alive when the inquiry opened; in which case his disavowal of knowledge is more perplexing.

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18. Professor I. M. Diakonoff cannot agree with what Sir Leonard says on the administration of justice in Sumer. He doubts whether the *lugal* was an earthly representative of the city's patron god and thinks he was the representative of the community *before* the patron god.

19. Professor J. Leclant points out that while its conception of the world may have been static, Egyptian civilization itself was far from stagnant; see H. Frankfort, *The Birth of Civilization in the Near East* (London, 1951), p. 99. The ancient Egyptians had no sense of progress; they were not orientated towards promises concerning the future. On the contrary, Egypt, springing from the heart of the Neolithic Age and destined, in a series of sudden leaps and bounds, to realize outstanding achievements, remained faithful to the memory of these early successes, seeking never to fall short of the accomplished pattern of its early days, rejoicing in the mirage of a Golden Age, an Age of Gods and Ancestors.

20. The Egyptian priests should not all be judged with the same severity. Autobiographical texts by more than one priest show high ethical principles: witness the famous maxims in the tomb of Petosiris, the good priest of Thot at Hermopolis, published by G. Lefebvre. Even if this homage paid to values of the highest order failed to correspond to the actual life of the priest, it constitutes none the less an ideal worthy of our admiration; see E. Otto, *Die biographischen Inschriften der aegyptischen Spätzeit* (Leiden, 1954). A number of fine texts engraved in the temples of Egypt specify priestly duties and bear witness to their ideals; see M. Alliot, *Le culte d'Horus à Edfou au temps des Ptolémées*, I (1949), pp. 181–95.

21. Professor J. Leclant points out that the Pharaoh, in his dual function as possessor and servant of Maat (Truth/Justice) was responsible for the order of the world, in a sense not far removed from what was to be, at a much later period, the doctrine of the Stoics. Thus the Pharaoh, as the demiurge who had overcome primeval chaos, must of necessity always emerge victorious. In the Egyptian conception of the cosmos, all its elements being linked by a series of interrelationships, the sovereign is responsible, generally speaking, for success in every domain: it is he who inevitably triumphs over his enemies, who must also, by his intervention with the gods, ensure abundance and economic prosperity for his country. In such a scheme of things, constantly professed, there can obviously be no place for failure of any kind. Thus there is no vainglory, no systematic falsification in the constant affirmation of victory circling the walls of the Egyptian temples, but rather a figurative representation of a systematic theme translating an overall conception of the universe.

22. Children of vassal princes were often brought up at the Egyptian court, where they served as a kind of hostage and grew up acquiring Egyptian habits.

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CHAPTER IV

# TECHNIQUES, ARTS AND CRAFTS

## THE MAJOR TECHNIQUES

### *Agriculture*

Agriculture in the great river valleys necessarily took on a complexion very different from that of the upland farming which had been the rule for the greater part at least of the Neolithic Age. The farmer was now independent of the rainfall of the winter season; the river provided all the water that his crops required. We have seen (Part II, Chapter II) that in Egypt water was employed for basin irrigation, which was gradually—but very early—introduced to supplement the natural action of the annual flooding of the Nile, whereas in Mesopotamia, owing to the different date of the flooding of the Euphrates and to the different contour of the valley, the method adopted had to be that of canalization from the river, i.e. perennial irrigation, the flood-water being used only occasionally to fill reservoirs which could be tapped later in the year. But that was not the only change. In the first place, there was now permanence of occupation.[1] In the old days man had cleared by fire a patch of wooded land and from the soil thus enriched had raised his crops, and when the soil was exhausted he had simply moved on and repeated the operation elsewhere; but in the valley the soil was renewed every year by the silt-laden waters that spread over it, and the same ground could be tilled generation after generation and lose none of its fertility. Because the farmer was now practically *adscriptus glebae* it was worth his while to plan for the future instead of merely exploiting the land for his immediate profit; an elaborate canal system built up by co-operative effort would not have been possible without security of tenure. Moreover, the scale of things was vastly greater; instead of the little forest clearing there was spread out the wide expanse of flat and fertile soil which needed only to be worked to produce all that man could ask; mere area demanded improved methods of tilling the soil.

The primitive fashion of sowing, dropping the seed into holes dibbled in the ground with a pointed stick, had given place to hand-furrowing, and this continued for a very long time; the settlements of the al'Ubaid people, the first immigrants into the Euphrates valley, are marked by the vast numbers of heavy flint hoes which litter the site. Such stone tools were crudely effective, especially in the light silt of the riverine countries, but their use meant slow work, limiting the area that could be cultivated—and in southern Mesopotamia at least they had to be imported, which added to the cost of farming. The wooden plough, involving first male labour and thereafter that of oxen too, brought about the change from plot cultivation to field

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tillage; at what date it was introduced cannot be determined, for of the implements themselves all traces have disappeared and the first mention of them in writing or the first representation of them in art gives us at best but a *terminus ante quem*; but in Mesopotamia and in Egypt the ox-drawn plough (Fig. 74) was in use by 3000 BC (and perhaps long before that) and in India almost as early, by the time of the development of the Harappā culture. There is no means of telling which country is to be credited with the invention; but that matters little; communications were far more rapid in the ancient world than one is liable to suppose, and the knowledge of anything so eminently practical as the plough would be passed from one country to another very quickly provided that local conditions were suited to its use. Naturally people in a lower stage of culture, such as those of central Europe, would have less

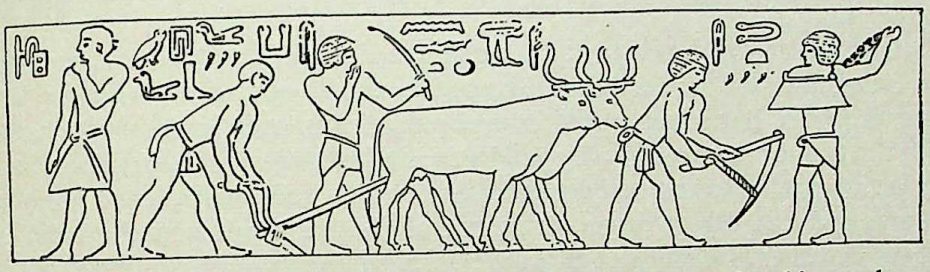

FIG. 74. Egyptian agriculture (Old Kingdom): ploughing, breaking sods, and sowing by hand (after Breasted).

need to adopt a mechanical device intended for large-scale production; but even so, the plough is figured on rock carvings in far-off Sweden as early as the middle of the second millennium BC, a thousand years before it is known to have been in use in China.

Given the plough, man was able to till a much greater area; the bigger harvest that resulted called for an improvement in the method of reaping. In the upland clearings the thin crop had been gathered by hand—as indeed is still done in the Middle East when the sowing has been on poor land and the growth is sparse; but on the rich irrigated silt mere hand-work could never cope with the harvest. Man therefore invented the sickle. In Egypt the reaper used an adaptation of a tool whose history went back to Natufian times; flint flakes were mounted in a straight wooden bar and this made a fairly effective cutting implement. In Mesopotamia the same principle was employed but the handle might be of baked clay and it was curved in the fashion of the modern sickle. But a curious alternative was also in common use; on the sites of village settlements of the al'Ubaid period there are always found numerous terra-cotta sickles with a sharp cutting-edge; the clay is fired so hard as to be not infrequently vitrified. Admittedly clay seems a most unpromising material out of which to manufacture a cutting-tool, but that drawback was overcome by the ingenious idea of over-firing (examples have been found of two or three

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sickles fused together by the actual melting of the clay in the furnace) and the thin and rather jagged blade-edge would certainly cut straw; such sickles are brittle and would easily break, which may account for the vast quantities found, almost every one of them broken. None the less, the clay sickle was a makeshift. No example has been recorded later in date than the al'Ubaid period, and it is fairly safe to conclude that the Uruk people, free users of metal, brought the copper (or bronze?) sickle with them into Sumer or else produced on the spot copper sickles imitated from the clay originals. At a time when metal was rare and expensive metal tools would never be thrown away; when too worn for use they would be melted down and re-cast; consequently it is not surprising that the earliest metal sickle recorded from Mesopotamia dates only from the Early Dynastic time; but the merely negative evidence justifies us in saying that they were introduced not later than 3000 BC.

The wheat which was first cultivated was einkorn, the one-kernelled type, which originated in the Near East and gradually spread over Europe and north Africa. But it was ousted from popular favour even in prehistoric times by the two- or six-rowed barley and by the husked two-kernelled emmer wheat which originated apparently in the Zagros region and soon reached Mesopotamia and then Egypt, where at the end of the prehistoric period it seems to have constituted about one-fifth of the crops grown, the two-rowed barley being 23 per cent and the six-rowed barley 57 per cent of the crop. In the Middle East emmer gradually gave way to its superior derivatives, the naked wheats, but it had a greater vogue in prehistoric Europe. The naked wheats of the emmer group, particularly durum, are most typical of Egypt and together with barley and millet were the staple crop throughout the whole of the Bronze Age; they were the wheats of Palestine and Syria and of Mesopotamia during the al'Ubaid period, but not later. At Lachish, in about 3000 BC, emmer and einkorn form 80 per cent of the grain found, the remainder being for the most part hulled barley, and club wheat (*Triticum compactum*), with a certain admixture of darnel. At Lachish, as on all sites throughout the Middle East, the lentil is very common; in Egypt it is found in pre-Dynastic tombs. The wheats of the spelt group, which appear to have had a northern origin, were those used in early times in the Indus valley. This is shown by a basketful of grain found at Mohenjo-daro; it is of the species *Triticum sphaerococcum*, but 'the grains show a remarkably wide range in size and shape, as if they had been derived from several strains', possibly a form of *T. compactum* combined with *T. sphaerococcum*. The mixture seems to indicate that in 2000 BC the process of hybridization was not fully complete though a certain standard has been reached, justifying the general definition as *sphaerococcum*; moreover, the specimens found at Harappā are of this type. They are found also in early levels at Anau (near Ashkhabad in Transcaspia) and in the Jamdat Nasr period are introduced into Mesopotamia, where they quickly drive the wheats of the emmer group off the field and become the prevalent Mesopotamian

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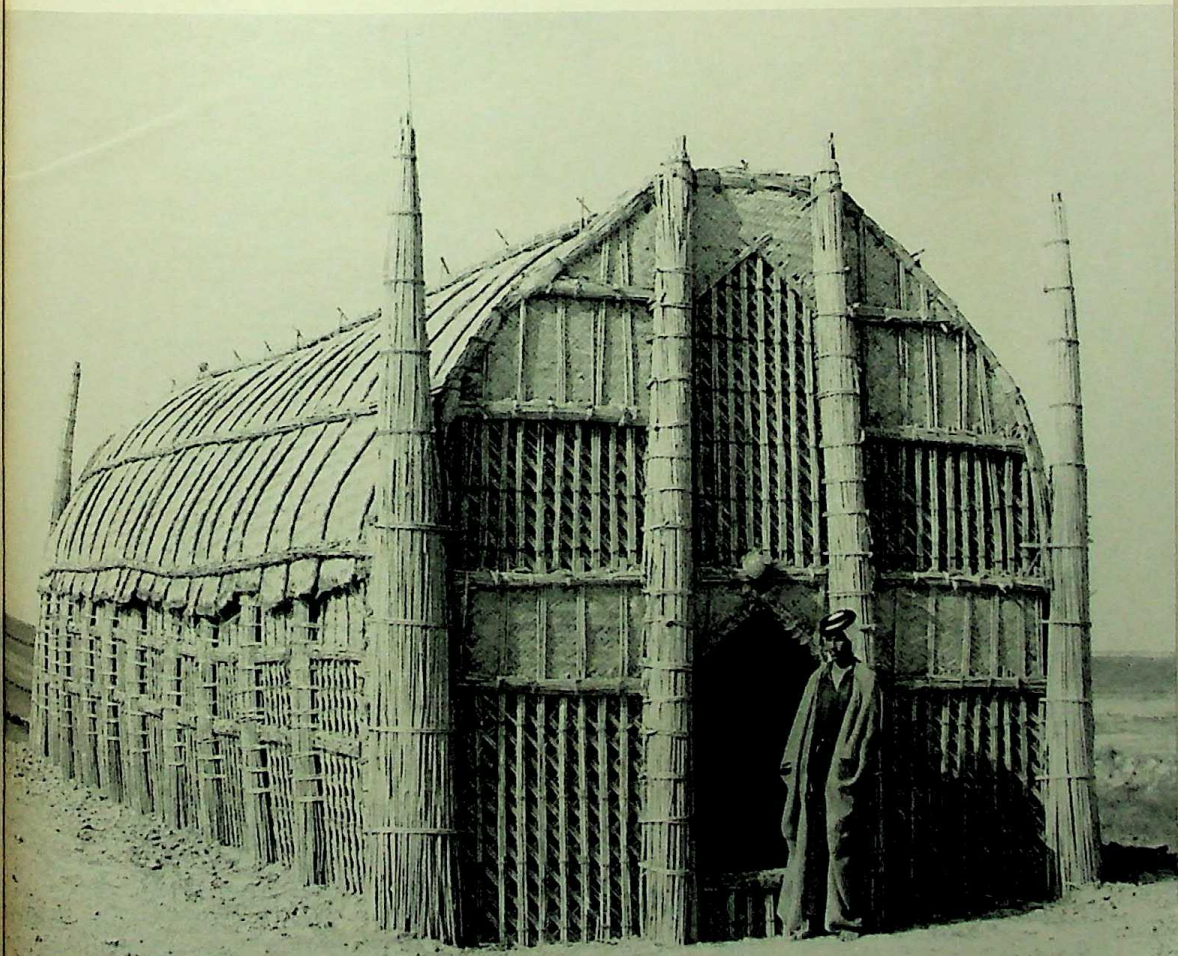
(a) [Thesiger

19 *Reed hut building*

(a) *basic structure*

(b) *completed building*

(b)



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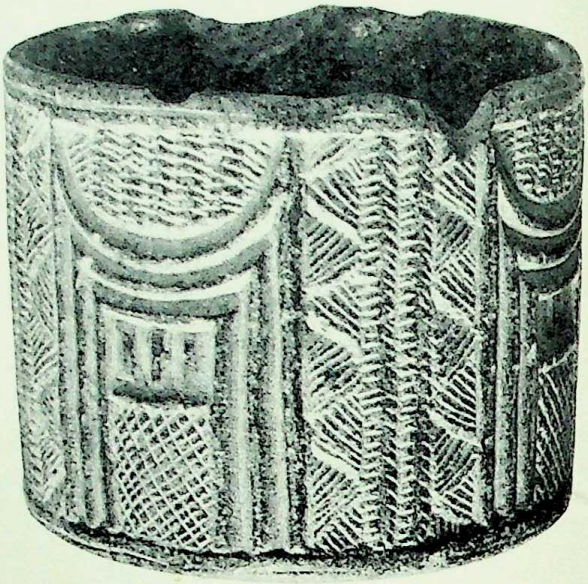
(a) [B.M.



(b) [O.I.

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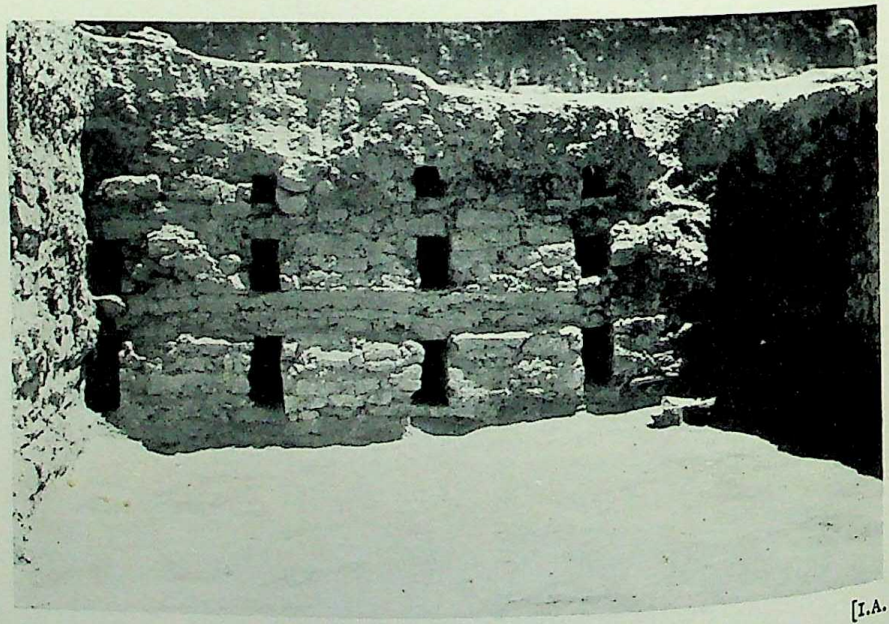
(a) *Warka: stone trough*

(b) *Khafajeh (Iraq): Mehi-type vase*

(c) *North Syrian half-timber and brick construction*



(c) [I.A.

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type; but they never got into Egypt, because the emmer group is more suited to Mediterranean conditions and so was able to hold its own there.

In China wheat was introduced only late; on the other hand, barley is mentioned as such in the bone inscriptions from Anyang. The main food of the Chinese was, however, millet; this has been found on Neolithic sites and it is constantly mentioned on the bone inscriptions, which may further differentiate between two varieties, the spiked and the panicular. The same sources give the character for 'rice'. Although Anyang lies somewhat north of the best rice-growing country, imprints of the cultivated grain have been found on Neolithic pottery from Yang-shao on the south borders of the Anyang territory, so that the Shang people may have raised rice-crops of their own rather than have it imported from the south; but even so rice, as compared with millet, must assuredly have been for them a luxury food.

The development and local standardization of particular types of cereals are, of course, in part dictated by varying conditions of soil and climate, but none the less do they bear witness to conscious experiment and to the intelligent observation of natural data; even if cross-breeding started accidentally, the ancient farmers of the Middle East were quick to take advantage of the accident. People who were capable of planning and carrying out the vast canalization schemes of Sumer, people who had been able to establish the solar calendar for the benefit of the First Dynasty Egyptian agriculturalist (see p. 680) were fully qualified to select the grains which best suited their country's soil and climate and even to improve artificially the varieties provided by nature.

In the case of Mesopotamia we have literary evidence for the early development of varying grain types. In the myth of Lahar and Ashnan it is said that prior to the creation of man

> the *shesh*-grain of thirty days did not exist,
> the *shesh*-grain of forty days did not exist,
> the small grains, the grain of the mountain, the grain of the pure living creatures, did not exist

which means that at the time when the legend took its form the slow- and quick-maturing grains were already distinguished, as well as those suited to different altitudes. A proverb of the third millennium speaks of the early barley and the late barley, and the myth of the Wooing of Inanna describes

> The farmer who makes plants grow abundantly,
> The farmer who makes grain grow abundantly

and specifies the wheat, the beans and the lentils. But the progress of agriculture in general is best shown by the (unpublished) 'Farmer's Almanac', dated to about 1700 BC, by which time it was already a classic[2] supposed to embody the instructions originally given by the god Ninurta. 'In days of yore a farmer gave instructions to his son: When you are about to cultivate your field, take



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care to open the irrigation works [so that] their water does not rise too high in the field. When you have emptied it of water, watch the field's wet ground that it stays even; let no wandering ox trample it. Chase the prowlers, and have it treated as settled land. Clear it with ten narrow axes [weighing no more than] $\frac{2}{3}$ lb. each. Its stubble [?] should be torn up by hand and tied in bundles; its narrow holes shall be gone over with a drag; and the four sides of the field shall be fenced about.' In the summer, when there was no work to be done in the sun-baked fields, the farmer was to make his household and hired help prepare in advance all the necessary tools, implements, baskets and containers: 'The yoke-bar should be made fast, your new whip should be fastened with nails, and the handle to which your old whip was fastened should be mended by the worker's children.' He must see to it that he has an

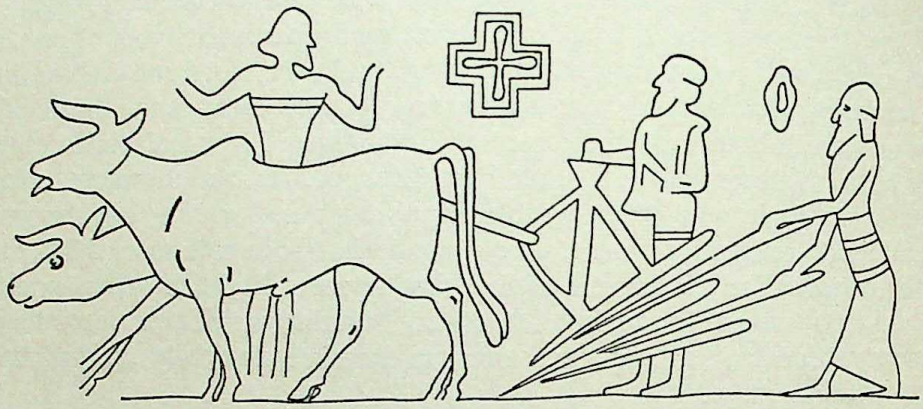

FIG. 75. Mesopotamian plough with seeder: from a Kassite seal-impression found at Nippur (after Kramer).

extra ox for the plough. Before beginning to plough, he should have the ground broken up twice by the mattock and once by the hoe; where necessary the hammer must be used to pulverize the clods. He was counselled to stand over his labourers and see to it that they did not shirk their work.

The work of ploughing and seeding was carried on simultaneously by means of a seeder—that is, a plough with an attachment that carried the seed from a container through a narrow funnel to the furrow, a type illustrated on a Kassite seal-impression found at Nippur (Fig. 75).

The farmer was instructed to plough eight furrows to each strip of approximately 20 feet; he was to see to it that the seed was placed at an even depth—'Keep an eye on the man who puts in the barley seed that he make the seed fall two fingers [apart] uniformly', and if the seed failed to penetrate the earth properly, he must change the share—'the tongue of the plough'. Ploughing must not be always in the same direction: 'Where you have ploughed straight furrows, plough diagonal furrows; where you have ploughed diagonal furrows, plough straight furrows.' Following the sowing, the furrows had to be cleared of clods, so that the sprouting of the barley would

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not be impeded. 'On the day when the seed breaks through the ground' the farmer should say a prayer to Ninkilim, the goddess of field-mice and vermin, lest these harm the growing grain; he should also scare away the birds. When the barley had grown sufficiently to fill the narrow bottoms of the furrows, he was to water it; and when it was dense enough to cover the field like 'the mat in the middle of a boat' he was to water it a second time. A third time he was to water the 'royal' grain. Should he then notice a reddening of the wet grain, it was the dread *samana*-disease that was endangering the crop. If the crop showed improvement he was to water it a fourth time, and thus get an extra yield of 10 per cent.

When the time came for harvesting, the farmer was not to wait until the barley bent under its own weight, but was to cut it, 'in the day of its strength'. Three men worked as a team on the standing grain, a reaper, a binder and another whose duties are not clear.

The threshing, which followed immediately upon the harvesting, was done by means of a sledge drawn back and forth over the heaped-up grain stalks[3] for a period of five days. The barley was then 'opened' with an 'opener' which was drawn by oxen. By this time, however, the grain had become unclean through contact with the ground; therefore, after an appropriate prayer, it was winnowed with long-handled winnowing-fans and thus freed of dirt and dust as well as of the chaff.

From these elaborate 'instructions' it is clear that in Mesopotamia the technique of practical agriculture as carried on in the Middle East had been perfected by about the end of the third millennium BC, and all the available evidence goes to show that in Egypt, with its different conditions, development was almost, if not quite, as early.

Somewhat similar progress was made with stock-breeding. With the introduction of the ox-drawn plough, cattle had become more valuable, but it was not in the ploughing season alone that the large-scale farmer could make use of them. In Sumer they were employed as draught animals probably as early as the beginning of the Uruk period: at Ur and at Kish there have been found the heavy solid-wheeled wagons drawn by them, and although these actual examples date from the Early Dynastic period yet clay wheels from model carts go back much earlier. The bringing-in of the harvested crops and the carrying of the grain from the farm to the city required that manpower should be supplemented by 'mechanical' transport. For the winnowing of the corn the Egyptian farmer usually clung to the primitive method of threshing with a one-piece flail (the jointed flail dates from the Iron Age) but in Palestine, Syria and Mesopotamia (and sometimes in Egypt also), an alternative to the flail was the treading-out of the corn by oxen. In those countries, too, other than Egypt, vast numbers of flint chips polished by use which are found upon early sites probably imply the use of threshing-sledges such as are employed at the present day—the corn is spread on the threshing-floor and an ox drags round and round over it a heavy wooden

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sledge whose under-side is studded with flint flakes, thus breaking up the ears and at the same time cutting the straw into short lengths fit for fodder. If the ox was to be a beast of labour, careful breeding (as well as good food) was needed to produce a strong type; that developed in Sumer, as can be learned both from representations in art and from skeletal remains, was a long-horned breed of about the size of modern European domestic cattle and generally resembling the Chartley bull. Because in the enervating climate of southern Mesopotamia the type was bound to deteriorate, fresh stock had to be imported for breeding purposes, and the Sumerian farmer was fully alive to this necessity; thus, in the temple-farm at Drehem there was kept a stud bull imported from the highlands of Elam. The zebu was known in the Diyala region.

In the same way with sheep; the traditional garment of the early Sumerian was the *kaunakes*, a kilt of sheepskin worn with the fleece outside, and the heavy wool represented in the drawings and statuettes implies long and careful domestication. It is not necessary to assume that the thirty-one different variations of the sign *UDU* in early texts correspond to different breeds (see Part II, Chapter VI), indeed it is far more likely that the type was fairly uniform throughout Sumer, but the valley sheep were certainly far superior to those of the nomad *sutu* in the Syrian desert; that much at least is witnessed by the *kaunakes*.

In Egypt the sheep seems to have been almost unknown in early times and its place was taken by the goat. The ram which is the symbol of the god Khnum may possibly represent an indigenous species which died out early in the Dynastic period, or again it may have been taken over from a non-Egyptian source and imply that the god himself was of foreign origin. That the Egyptians knew of the existence of the sheep would appear certain inasmuch as the flocks of the Semitic nomads of Sinai could scarcely have escaped their notice, but for some reason or another it was not admitted into the Nile valley until well in the Dynastic Age, after which time two breeds are represented. Even the Hebrews have put it on record that 'shepherds were an abomination to the Egyptians'.

The other domestic mammals of the Middle East were the dog, the ass, the goat and the pig, and of birds the goose and the duck.

The case of the camel is peculiar.[4] The true camel, the two-humped species (*Camelus bactrianus*), is a native of central Asia, ranging from Iran to the Gobi desert. Camel bones have been found at Shah Tepe in domestic levels dating to 3000 BC and at Anau in the beginning of the Copper Age, while remains found in a prehistoric settlement in the Kiev area would imply that it was domesticated in the steppe zone at least as early as 2000 BC. Presumably it was used quite early by the nomads of south-east Russia, for there are many Aryan names, like that of Zoroaster himself, which end in '-ushtra', 'camel', i.e. 'owner of camels', and it may have played an important part as one of the links between the Middle and the Far East. A single bone of a camel (but

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the species is doubtful) was found in the excavations at Mohenjo-daro. The single-humped dromedary (*Camelus dromedarius*) is the southern species. Fossil remains of it have been found in Egypt, and its existence in later times is amply proved. From the pre-Dynastic period we have an ivory tablet found near Gurnah showing a man riding a camel, and a terra-cotta figurine from Ma'adi. A rope made of camel's hair found in the Fayum is dated to the Third Dynasty. A camel's skull, also from the Fayum, is attributed to the Middle Kingdom, as are some rock drawings in the Wadi Hammamat. There are four or five representations of camels of New Kingdom date. This evidence, much of it coming from outside the Nile valley proper, is not sufficient to prove local domestication of the camel, but does make it clear that the animal was known to the Egyptians; probably it was used and kept by neighbours, the desert dwellers whom the Egyptians hated. Biblical references to the camel (Genesis xxiv and xxxvii) fully harmonize with this. We are indeed obliged to conclude that in Arabia at any rate the camel was domesticated at an early date, its employment anticipating and leading up to the highly-organized commercial traffic on which was based the prosperity of the Minyean kingdom of the fourteenth century BC. The silence of the texts, both Egyptian and Babylonian—and even in late times when camels are known to have been in use they are seldom mentioned in contracts or letters—may be due to the fact that the Sutu-Beduins had a monopoly of the carrying trade across the desert and, as was the case in recent times, rarely brought their animals inside the towns, so that little notice was taken of them by the writers.

The horse first appears in the Middle East early in the second millennium. It was brought into regular use in Mesopotamia by the Kassites[5] in the seventeenth century BC and reached Egypt in about the time of the Hyksos possibly through their agency;[6] it was brought into India by the Aryan invaders perhaps two centuries later.[7] For a long time its use, both in Egypt and in Mesopotamia, was confined to the drawing of military chariots; the Mitanni might ride on horseback, i.e. on stallions, but in the eyes of the native Mesopotamian that was an unseemly habit.

India apparently had no asses, but had the water buffalo, the short-horned cattle of Mesopotamian type, a long-horned urus type, and the great humped zebu; that these were domesticated is shown by the fact that on the seals they are usually represented standing before a manger or an offering table; sometimes they are garlanded, implying that the bull was sacred then as now. The elephant also had been domesticated and is pictured wearing a collar. Whether or not the sheep was kept in the Indus valley is doubtful; the goat, on the other hand, is well attested by seals and by clay figurines.

By the time of the Shang Dynasty the Chinese had domesticated cattle (most of the oracles are inscribed on cattle bones), the horse (skeletons of horses are found in the Anyang graves with the war chariots), sheep and dogs. The elephant and the rhinoceros were kept, certainly in the pleasure-parks of

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the rulers, and probably elephants were used in war and for some kinds of work. China at a very early period had domesticated the hen, which slowly moved westwards, was acclimatized in Elam and was introduced into Egypt in the Eighteenth Dynasty, when the Pharaoh boasts of having received (from Elam?) 'birds that give birth every day'. There is a drawing of a cock on an ostrakon of that period.

In all countries of the ancient world where agriculture achieved any notable advance men were quick to supplement the natural resources of their own lands by importing new foodstuffs from foreign parts. It is quite characteristic that Sargon of Akkad should bring back with him from a successful raid into central Anatolia specimens of vines, figs and roses for acclimatization in Mesopotamia; and although the Egyptian queen Hatshepsut was perhaps influenced more by religious than by economic motives in importing myrrh trees from Punt to be planted in front of her Deir at Bahri temple others before her had introduced into the Nile valley plants more generally useful. Perhaps the most interesting case of acclimatization is that of the grape-vine. A native of Anatolia, and probably of the Syrian ranges of Amanus and Lebanon, it spread early over the Near East—discoveries made at Lachish show that at the beginning of the Bronze Age, *c.* 3000 BC, grapes were dried and eaten as raisins as well as being used for wine-making. The vine spread early into Europe, but eastwards it made slow progress, being grown fairly early in Persia, but not beyond. It probably came into Afghanistan, and so into India, in the wake of Alexander's armies, and it did not reach China until the year 128 BC when the Chinese general, Chan K'ien, found it in Bactria and was led by his appreciation of the wine drunk in Ferghana to send grape-seeds home for the emperor to grow. At what date the vine was brought into Mesopotamia we cannot say, but even in the south it was grown as early as the time of Urukagina, who mentions the royal wine cellars (*Saki.* 57, i. 5, 2–4), so that Sargon was merely collecting new varieties, not introducing something hitherto unknown—and the same is true of the fig, which also is mentioned in texts of Urukagina.

It is now certain that the grape was known in Minoan Crete, and grape-seeds have been found on Mycenaean sites such as Orchomenos, Tiryns and Mycenae in the Middle Helladic (Late Bronze) Age, so that the Homeric picture of vine cultivation in Ithaca, with varying species that ripened at different times (*Od.* xxiv, 340) need not be thought exaggerated. The Dionysis legends make it clear that the Greeks owed their knowledge of the grape, and of the making of wine, to Anatolia; the channel whereby that knowledge came to them is not yet certain, but it may well have been the Achaeans, established on the Asiatic mainland in the neighbourhood of Miletus, who passed it on to their kinsmen on the islands and in Greece proper.

The wild Oleaster or Olea from which the various species of olives are derived seems to have been indigenous in Syria and Palestine, this being the spineless variety, while a type with spines seems to have originated in Crete.

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The cultivation of the olive tree and the extraction of olive oil began in Palestine (Lachish) before 3000 BC, and in Crete at least as early as the middle of the third millennium BC; the huge *pithoi*, storage jars for oil, found in the magazines of the Knossos palace prove that the wealth of the Cretan kings early in the second millennium BC was in part based on the export of olive oil. In Syria it must have been exploited at an early date and after 1500 BC, when the use of olive oil became common in Egypt, Syria must have been the main source of supply. It never spread into Mesopotamia, where the climate was unfavourable, and its place was taken by the sesame, but it gradually established itself throughout the Mediterranean lands. Its progress, however, was slow. Homer knew of it, but as a luxury reserved for the rich and not produced in Greece; it was probably only after 1200 BC that the tree was acclimatized on the Greek mainland, and only in the course of the first millennium did it reach Italy and France.

In the course of the Bronze Age the agricultural economy of the ancient world assumed the form which it was to retain with very little change until mediaeval if not until modern times. By 1200 BC the peoples of the different countries had selected and developed the types of cereal that best suited local conditions, and since a large proportion of the grain was grown in artificially irrigated soil they were reasonably assured of a harvest, independently of the vagaries of weather; the methods and the tools used by the farmer would be used for another millennium at least, the only change being that iron would soon take the place of bronze. All the domestic animals of the present day were already in man's service, though the role of the horse was still but a small one, limited to the war chariot. Of tree fruits the fig, apple, pomegranate, peach and mulberry were all cultivated; dates were the most important product of southern Mesopotamia, where many varieties were grown, and were cultivated in Syria and Egypt and as far eastwards as India, where datestones have been found in the ruins of Mohenjo-daro. The market-gardeners produced a considerable variety of vegetables; Ur-Nammu of Ur (*c.* 2100 BC) claims that as a result of building a temple to Nannar 'he saved the vegetables in the garden plot'; onions were specially favoured, as were leeks, cucumbers and melons of many sorts.

Apart from foodstuffs the main crop grown in Egypt was flax; since the Egyptians never wore woollen garments and linen was the only cloth in general use, flax-growing had to be on a large scale and as an industry must have rivalled in importance the growing of grain. In Mesopotamia, where wool was generally preferred for clothing, the flax industry was at best a secondary interest and a good deal of the linen that was used may have been imported from Elam, where it had been manufactured from a very early date. That flax was grown in India also is probable, but no evidence of it survives; in view, however, of the unlikelihood of such a material being preserved in the Indian soil the negative argument cannot be stressed. On the other hand, traces of woven cotton fabric have been found at Mohenjo-daro, proving that the cotton

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plant was cultivated in India as early as 2000 BC at least. Judging by the large number of spindle-whorls too small and light for the spinning of wool which are found on the Indus valley sites cotton cloth must indeed have been in common use locally; that it was manufactured for export also is proved by the fact of a fragment of cotton fabric bearing a seal-impression of the Harappā type being found in Iraq. Cotton-growing, on the other hand, did not spread from India either to the west or to the east until very much later times. In China linen was used from an early date, for fibres of some sort of hemp have been found at Anyang. Silk also seems to have been known to the Shang people; the character for 'silk' has been identified (with some hesitation) on bone inscriptions, but actual silk fibres have been discovered in the Anyang tombs. This does not, of course, prove the cultivation of the silkworm in Shang times, but as early Chou graves have produced jade carvings of silkworms, and as Chou literature not only mentions silk very frequently but even describes the gathering of young mulberry-leaves for the feeding of the silkworms, it is reasonable to suppose that artificial silk-production goes back to the immediately preceding period and that it should be reckoned amongst the agricultural activities of the Shang people.

*Architecture*

The settled life of the agriculturalist demanded from the outset some form of shelter for his household. As in the course of time and with the increase of wealth the primitive hamlet developed into the town and the town into the city, social distinctions would generally lead to more ambitious building for the well-to-do individual citizen, but always the central government, which was a condition of civic existence, would symbolize its authority, whether secular or religious, by palaces or temples distinguished in scale and splendour from the houses of ordinary men. In all countries alike the same progress can be discerned, and in all alike it is the patronage of the rich and powerful that gives to the builder's craft the stimulus which engenders the art of architecture; but in each country the particular character which architecture takes on is largely decided by the materials available to the builder.

This truth is clearly brought out by Vitruvius in his *History of Architecture* when he describes man's earliest efforts in house construction: 'Some of them', he writes, 'began to make roofs of leaves, others to dig out caves under the hills; some, imitating the nests and constructions of the swallows, made places into which they might go, out of mud and twigs. Finding then other shelters and inventing new things by their power of thought, they built in time better dwellings. . . . At the beginning they put up rough spars, interwove them with twigs and finished the walls with mud.' The Roman author rightly insists upon materials and methods of construction rather than upon the shapes or styles of building; man did not invent an architectural form and then look about for the material best suited to the concrete realization of his new idea; he began by making what use he could of such material

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as nature offered him, and very soon found that the form was imposed upon him.

The failure to realize the extent to which material determines form has given rise to a good deal of discussion amongst historians as to whether the circular or rectangular building comes first in point of time. Certainly the evidence available suggests the priority of the circular construction, but it must be remembered that the evidence is conditioned by the possibilities of survival. Probably the oldest houses yet discovered are those in the Lower Neolithic strata at Jericho; they are dry-stone buildings roughly circular in plan, and it is only in the higher levels that rectangular huts of stone rubble occur. Similarly at Hassuna in northern Iraq, where there was a settlement of the period when agriculture was just beginning to replace the food-gathering existence of the nomad hunter, round huts were the first to be erected, these again being of stone rubble. On many prehistoric sites where, in default of stone, men made for themselves shallow dugouts with sides of heaped earth and roofs of boughs, the dugouts are round, as in prehistoric China.

The primitive dwellers in caves and rock shelters could easily—and did—learn how to pile up stones into a screen to narrow an entrance or to divide the space; how early they could profit by that experience is shown at Jericho, where the massive rubble walls built by Neolithic man go back, apparently, to the seventh millennium BC. The technique of placing one stone upon another came easily to them, and in the case of a town wall very little planning was wanted—they knew what they had to enclose, and the wall-line would take its direction almost automatically. The case of the house was quite different. When, with a changed manner of life, the cave became inconvenient as being too far from the cultivated land, and people moved down to the foothills and the valleys, their experience in heaping up stone screens still stood them in good stead—where there was no natural cave they could build one. But here something in the nature of a plan was necessary. The old cave had been a place inside which they had lived, and it was that—the inside, not the outside—which they wanted to reproduce, for there had never been an 'outside' to the cave. Consequently the stone hut was built from the inside; you stand in the middle and arrange the stones all round you; and the result is, automatically, a circular building. Similarly with a dugout; you take your stand where you want your hut to be and you dig, throwing the earth outwards, and the earth forms a circle with you as the centre; you cannot help it. In countries therefore in which stone is the obvious material for building, e.g. in northern parts of Mesopotamia and Syria, in Anatolia and in the Greek islands, we should expect the round house to be the earlier type; only when men have become relatively sophisticated and want bigger rooms do they perhaps learn that a roof of straight beams is more easily laid across parallel walls. But the case was very different in the great river valleys which gave birth to the world's oldest civilizations; in them stone was hard to come by and the



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different materials that men perforce employed imposed upon them a different type of architecture. Those materials were less enduring than stone, so that direct evidence of the buildings can seldom be adduced, and owing to the late formation of the riverine lands the settlements in them are not likely to date back to so early a date as that of the Jericho houses; but none the less are we justified in defining the character of the buildings and in asserting that they were indigenous to those lands and the first to be set up by the inhabitants of them. For the history of the beginnings of architecture the Mesopotamian record is by far the most detailed, and an account of it will serve as a background for the study of developments in more or less similar conditions in the other valley centres.

In the Euphrates delta all that nature supplies is mud, reeds and palm-trees. In that country, therefore, the simplest and the most obvious thing to build is the reed hut; that is true of the present time and was equally true at the time of man's first arrival here; the reed-stem and the woven reed-leaf mat were the first materials used for house-building.

The method of construction is this. First you plant upright in the ground two fascines or bundles of tall reeds (single stems would not be strong enough to resist the wind) and then you lash to them cross-bars made of smaller bundles so as to form a framework, to which you fasten reed matting to complete the wall; it is a simple enough process, and immediately the influence of material upon style becomes manifest. The fascines forming the horizontal bars are straight and rigid; automatically therefore the matting wall is a straight wall. It can, of course, be prolonged indefinitely by the addition of fresh uprights, but these must be planted in line with the first two; to enclose a space—which is the whole purpose of house-building—the last upright has to be taken as a corner-post for an angular return, the result being that the ground-plan is rectangular. In practice, the two long sides of the building are set up simultaneously, two rows of fascines being planted parallel one to another, the fascines in the two being equally spaced so as to correspond exactly; the upright bundles are thinner at the top and therefore pliant; opposite members can be bent inwards and lashed together across the middle and you have the framework of a tunnel-like room which can be covered in matting, vaulted roof and all. The process is best illustrated by modern examples, the reed buildings of the Marsh Arabs of southern Iraq; Pl. 19, a, shows the start of such a building, with the upright fascines inclined outward so as to resist the strain of the inward bend that makes the roof, while Pl. 19, b, shows the completed structure, in this case a guest house, a large building which is certainly not without architectural merit. This is precisely the type of building represented on a stone relief of the fourth millennium BC now in the British Museum (Pl. 20, a) and again upon a frieze of about 2700 BC from Ur. Sumerian legends state that reed huts were used before the Flood, and at Ur there were found underneath the silt deposit left by the Flood fragments of thick slabs of clay bearing on one side the impression of

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reed-stems, which were bits of the mud plaster of a reed hut. For that is the second phase. The matting walls are not proof against draught, and the obvious remedy is to plaster them with the ubiquitous mud; walls and roof alike can be plastered, and as every now and then a fresh coat will be desirable, the mud-work in course of time becomes very thick. Supposing that such a house catches fire, which may easily happen (the pre-Flood plaster found at Ur came from a hut which had been thus accidentally burned), the hardened mud will still be left standing upright, enough at any rate to suggest to some observant individual the novel idea that reeds are perhaps after all not essential, but that a house could be built with mud only. One way of doing so is to use *terre pisée*. This was the regular method in China in the Shang period and for long after, but to hammer the earth really firm requires a caisson of wooden planks which for the Chinese were ready to hand but in southern Mesopotamia were hard to come by, so that examples of it, although they do occur in Sumer, are rare. Another method is to pile up basketsful of stiff kneaded clay. For rough work such as building a garden wall it serves well enough and is indeed still in use in Iraq; but it is clumsy at best, and when the wall is more than shoulder high the weight of the basket-load makes further building difficult; so some ingenious builder conceived the idea of conveniently small lumps held together by mud mortar.

*Brickwork*. At first these would be mere lumps pressed together by hand, as in the Neolithic levels at Jericho, but later they were moulded in an open wooden frame, instead of the old round-bottomed baskets—and the frame, being of wood, was necessarily rectangular, and rectangular lumps were vastly easier to lay—and at once the practice of brick-making spread far and wide. In Sumer moulded bricks, both crude and kiln-fired, were used side by side with reed-hut building even in the pre-Flood period (al'Ubaid I) and the examples found underneath the Flood deposit are probably the oldest yet known to us, but whether or not they were a local invention it is impossible to say. In Egypt bricks seem to have been introduced towards the end of the pre-Dynastic period, when they replace the wattle-work smeared with mud which was normal in pre-Dynastic times; brick-making therefore begins later there than in Sumer and may well be due to a borrowing of ideas. In the farther east, the ruins of Mohenjo-daro and Harappā show us an architecture uniformly carried out in brick—crude bricks for terrace foundations and perhaps for the upper parts of walls of private houses, burnt bricks, often set in bitumen mortar, for most walls—but are far too late in date to throw any light upon origins. Some of the pot-stone decorated vessels found in Mesopotamia but made in Mehi represent the façades of buildings in which brickwork is used side by side with matting applied to a timber frame (Pl. 20, b); the combination of the two materials suggests a transition in building methods and on those grounds it is perhaps legitimate to assume that Baluchistan learnt the art of moulding bricks not long before the beginnings of the early

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Dynastic period in Sumer (to which the vases in question belong) and probably learned it from the Sumerians—an assumption which is but reasonable in view of the trade relations between the two countries and, in particular, of the Sumerian character of the buildings at Mundigak. The Chinese, on the other hand, clung to their traditional *terre pisée* and never used bricks at all.

But whether the Sumerians invented the new medium or adopted it, they applied it to an art whose main lines had already been decided. In the matter of wall construction, the primitive builders of the reed hut had laced their matting on the inside of the framework just as do the modern Marsh Arabs (Pl. 19, b). When, then, they laid on their mud plaster the upright fascines produced the effect of half-columns dividing the wall-face into panels. This had a distinct decorative value, and would be most noticeable in the case of larger buildings in which the uprights would be more numerous, heavier, and therefore standing out in more prominent relief, and probably closer together so as to obtain solidity in a higher construction; this is well illustrated by the modern 'guest house' on Pl. 19, b. The temples of the early al'Ubaid people must have looked very much like that 'guest house', and, because religious traditions are binding, the builders in brick copied their old models faithfully. The rounded half-columns might be kept, as we see at Erech, or, since the bricks were rectangular, might more easily be translated into square buttresses but for a religious building the panelled wall was essential, and the convention held good down to the last days of Babylon. Actually it was confined to temples; originally because there was no point in imitating the few and flimsy uprights of the private individual's house and later because it had become so closely associated with temples that its lay use would have implied impiety—man arrogating to himself the peculiar features of the house of God; but the house of God must for all time be as it was in the beginning.

The reed hut had other lessons to teach the architect. Where it was small and square the tops of all four corner uprights could be bent inwards and tied together, and the result had been a dome. That could be reproduced. One of the royal tombs at Ur, *c.* 2700 BC, has a dome of limestone rubble set in mud mortar constructed over a timber centering; on the Ziggurat terrace at Ur, King Ur-Nammu (*c.* 2150 BC) built a cistern surmounted by a brick dome, and the dome seems to be implied by the constructional features of some of his as well as of later buildings such as the Dublal-makh shrine at Ur in the Larsa and Kassite periods. The tunnel-like reed hut, mud-plastered all over, inevitably suggested the arch and the vault. In Sumer the true arch appears early; one may suspect that it started by laying bricks over the arched matting, in which case the bricklayers cannot have failed to notice the principle of radial jointing which the bricks would automatically follow; naturally arches built above-ground can very seldom survive, but there is evidence enough to prove that the form was employed by Mesopotamian architects to the end of Babylonian history. Thus, the doorway of one of the royal tombs at Ur is capped with an arch of burnt bricks; to the same Early Dynastic period belong

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a mud-brick arch in a drain at Nippur and another at Tellô; mud-brick arches occur in tombs of the Third Dynasty and Larsa periods; a fallen arch of burnt brick was found in a doorway of a Larsa private house, and a fifteenth-century arch of burnt bricks set in bitumen was found in the Ur shrine Dublal-makh as reconstructed by the Kassite ruler Kurigalzu (Pl. 21, a). In Egypt the arch (in mud-brick) first occurs in the Third Dynasty but is never common and was never used as an architectural feature; where used at all it is masked, generally by a flat lintel. Similarly the barrel vault, used in most of the Ur royal tomb chambers, can safely be attributed to temples of both the Larsa and the Kassite periods, and is the normal roofing of mud-brick tomb chambers from the time of the Third Dynasty down to early in the Kassite period, after which burial customs changed and tomb chambers went out of fashion. These vaults were built without the support of centering, the brick rings being laid at an angle, leant against the end wall, so that each successive ring was supported by resting on its predecessor, as shown in the diagrammatic sketch (Fig. 76); the bricks used were not voussoir-shaped but normal rectangular bricks and the voussoir effect was produced simply by putting extra mud, mortar, or sometimes mortar mixed with pot-sherds, at the upper end of the joint. Although the outward form of the vault was derived from the reed hut, the method of construction was by no means obvious; the slanting of the rings and the raising and strengthening of the end wall against which they lean are altogether in the brick techniques and imply a real knowledge of stresses and ingenuity in meeting them.

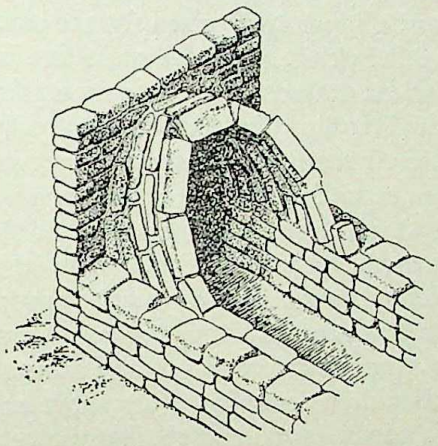

FIG. 76. Method of ring vaulting construction.

When, therefore, we find an identical technique in Egypt at a later date, we are probably justified in considering this to be a case of borrowed art. The earliest surviving Egyptian example is of the Twelfth Dynasty, in the workmen's dwellings at Kahun; at no time was it common, and its first use in a major monument seems to have been in the Nineteenth Dynasty Ramesseum; certainly not until then did it seriously affect Egyptian architecture, whereas the layout of a good many Mesopotamian temples seems to have been dictated by the intention of the architect to employ the vault and by the limitations of his skill. A barrel vault with sloped rings can be built very easily across a small span, e.g. over a tomb chamber not more than a metre and a half wide, but as the span increases so does the difficulty of construction. To some extent the difficulty is met, or lessened,

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by the use of voussoirs, and such have been found, e.g. at Ur, though never *in situ*; at Alalakh, in northern Syria, long narrow chambers, up to 2·50 metres wide, probably magazines, in the royal palace of the twenty-fourth century BC, were vaulted with well-shaped voussoir bricks, and Alalakh must certainly have learned from Sumer, seeing that the kingdom had business relations with Mesopotamia and that the true vault is not a feature of the native architecture of Syria. But where the span to be covered by the vault was at all large the Sumerian builder, perhaps mistrusting his powers, preferred the corbelled vault set up over a wooden centering. Such was the case with the stone rubble chambers of the royal tombs, where the span is 2·20 metres, and with the 3·60 metres-wide chambers, built with burnt bricks and bitumen, of the mausoleum of the Third Dynasty kings of Ur; in later times corbelling is freely used for the small mud-brick tombs of private citizens of Babylonia, and here again size is the determining factor. Mud-brick is indeed the worst possible material for corbel vaulting owing to its low tensile quality; burnt bricks if set in a really binding mortar such as bitumen serve the purpose much better, but because of their small size require careful laying to assure an adequate counterpoise. Stone is the only satisfactory material, and where stone is normally used for building there is no need to suppose that the technique of corbelling is necessarily borrowed; even if no timber centering be employed to give support during construction, yet it is so natural to bring the walls together by making each course overlap slightly the line of the course below that there was no need of a foreign teacher to show how it should be done: and a very little experience, perhaps dearly bought, would instil the lesson that there must be a counterpoise. The corbel vaulting of the Grand Gallery in the Great Pyramid at Gizeh has a projection for each course of three inches (0·075 metres) only, an exaggerated precaution that seems to imply an experiment on original lines; similarly the stone corbel-roofed tomb chambers of Ugarit (fourteenth century BC) (Fig. 79) and the beehive *tholoi* of the Mycenaeans need not owe anything to Sumer, and for the origin of the corbelled stone tombs of Spain we need look no farther east than Crete.

The early Sumerian builder in brick derived his knowledge of principles from the reed hut of his predecessors, but could not always apply them directly. The reed building with its arched-over roof might be quite large, and clients demanded something not less impressive in the new material. It was easy to plan a great hall and to set up its walls in brick, but since you were not dealing with pliant reed-bundles and the span was too great for vaulting (even supposing that the mud-brick walls would have stood the outward thrust of a brick vault), something else had to be done. All that was needed was a modified use of the old materials. Light poplar poles—the poplar grew freely in the Euphrates valley—were laid as rafters from wall to wall, and over them reeds laid at right-angles; on the reeds mats were spread and on the matting earth and a top coating of mud; the flat roof of the ancient and of the

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modern Middle East is the natural outcome of building in brick. Such a roof, flat or slightly sloped for drainage, is most effective, cool in the summer and in the rainy season reasonably waterproof; but it does need a fresh coat of mud after the winter, and the original thickness (which should be about 65 millimetres) is soon multiplied; mud is heavy and the load upon the roof-poles becomes too great and therefore, if the span be at all considerable, the roof will require support, which means a column or columns.

Until quite recently it had been assumed that the column was unknown in ancient Mesopotamia, so much so that when an American excavator announced his discovery at Nippur of a columned hall dated to the fifteenth century BC he was held up to ridicule on the grounds that columns were only introduced into the country by the Greeks. It was an absurd assumption, because where nature supplies the palm-tree man can hardly help adapting it to use as a column; true, no column had been found, but that was because actual palm-logs had been employed and these had of course decayed and left no trace of themselves. Now there have been found at Erech huge columns, 2·5 metres in diameter, built of specially moulded radial mud-bricks and overlaid with elaborate mosaic; they date from somewhere about 3000 BC. Similar but rather smaller brick columns recur two or three centuries later at Kish, and at much the same time the king of Alalakh, following the fashion set by his Mesopotamian business clients, built similar columns for the façade of his palace. The little temple at al'Ubaid, built by A-anni-pad-da about 2700 BC, had columns of real palm-logs either sheathed with copper or covered with a polychrome mosaic reproducing the scales of the palm-trunk. The brick column was used by Ur-Nammu (*c.* 2100 BC) in one of his temples at Ur, and a later example (by Warad-Sin, *c.* 1800 BC) is of moulded bricks which reproduce the scale-pattern of the palm-trunk in relief. The column then was a perfectly familiar feature of Mesopotamian architecture, and its origin was no less familiar.

In Egypt, because from the Third Dynasty onwards the columns that adorned temples and palaces were of stone, the evidence for their use exists in uncounted quantities, and because they are translations into stone of originals in other materials they illustrate perfectly the art of periods for which no direct evidence survives.

There are two standard types of Egyptian column (Fig. 77); one imitates the palm-trunk, the other a bundle of papyrus reeds tied together at the top and bottom. The palm column has a capital either of palm fronds or in the form of a flower-calyx, rather like an inverted bell. The papyrus column at its first appearance (in the pyramid-temple of King Zoser of the Third Dynasty, Pl. 21, b) has a severely rigid shaft and no true capital but what may represent mud-plaster applied over the upper tie. But this is a unique case, and normally the reed bundle is realistically rendered, showing the ties and the swelling above the lower tie due to the reeds bending under the pressure of the roof; the shaft therefore is naturalistic, but the flowering heads of the reeds, pressed

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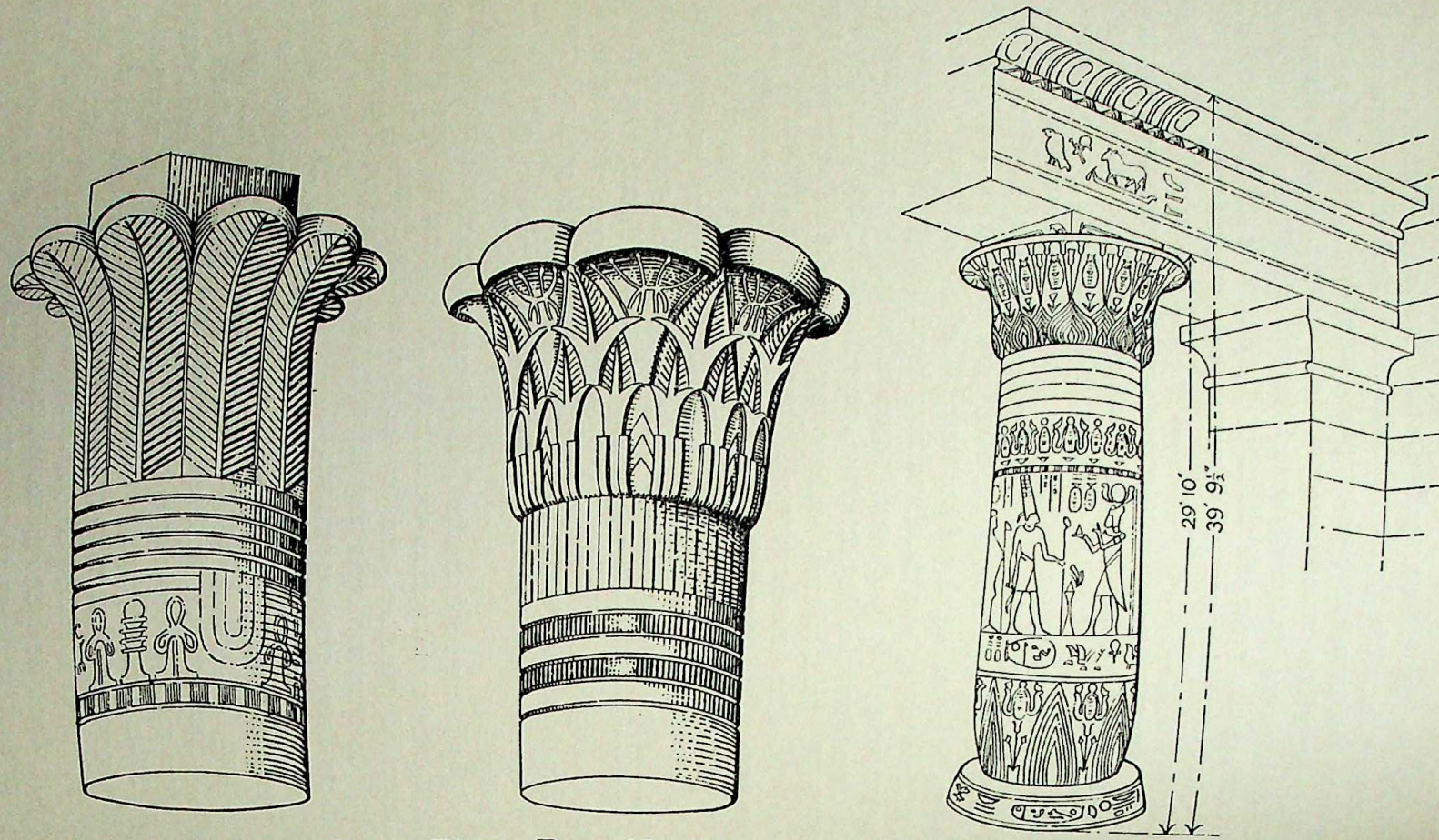


FIG. 77. Types of Egyptian columns (after Fletcher).

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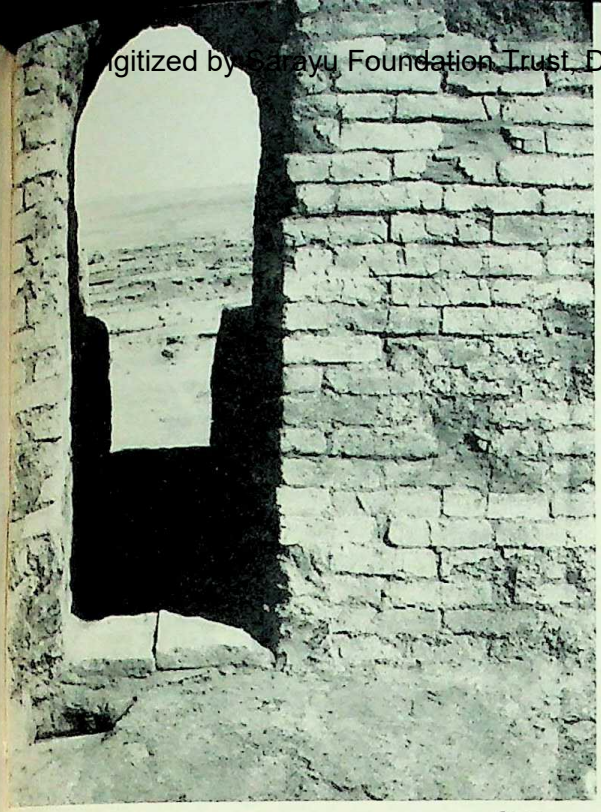
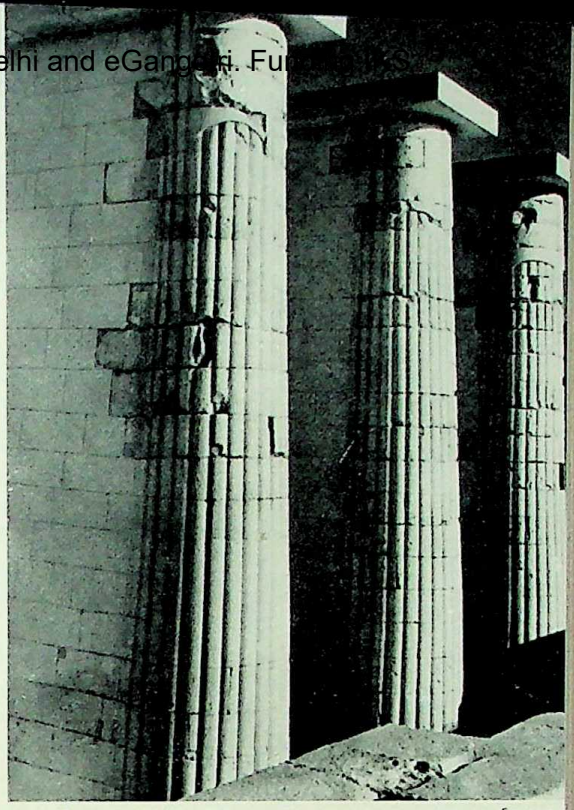


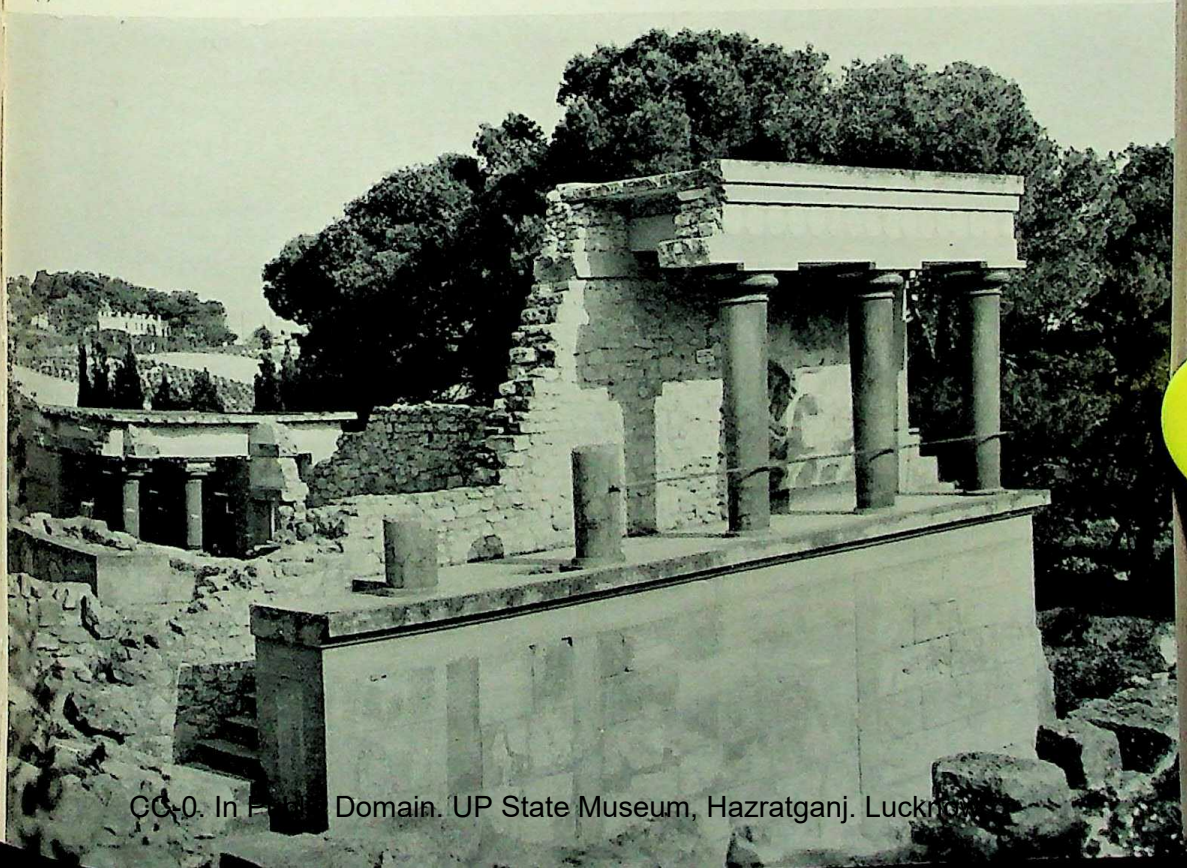
(a) [B.M.



(b) [D.A.E.

21 (a) *Ur: Kurigalzu's arch*
(b) *Saqqâra: Zoser's attached columns*
(c) *Palace of Minos: tapered columns*

(c) [H.M.



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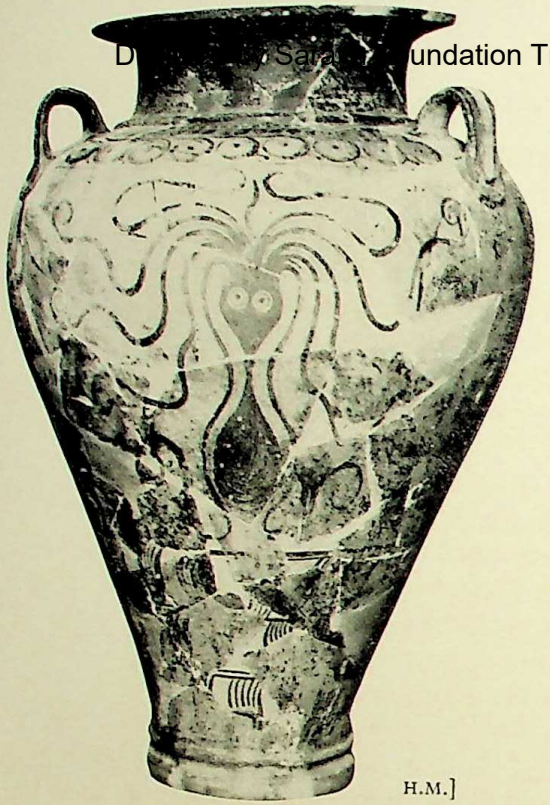

H.M.]

[E.H.M.

24 *Cretan pottery*

[B.M.

*photo Josephine Powell*]

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outwards by the roof's weight, could not well be rendered in stone and are ingeniously conventionalized into an opening lotus-bud. There are variations of detail, of course; in the great Luxor temple the straight shafts are reeded for two-thirds of their height and plain for the top third; at Tell el Amarna, again in the Eighteenth Dynasty, the reed column is given a palm-frond capital; but, with the single exception of the ugly Hathor-head capitals which were never much in favour until Ptolemaic times, the Egyptian column as a whole preserves the memory of the palm-trunk or the papyrus-bundle of the prehistoric age.

By the middle of the second millennium therefore the architects of the two countries which led the way in Middle East civilization had evolved all the basic features of architecture as it is known today. In every case the evolution starts with the forms which were imposed upon primitive man by the materials at his disposition and is conditioned by the character of those materials; the genius of the builder showed itself not in the invention of forms but in the use of new materials and his combination of their peculiar characteristics with his inherited tradition.

*Materials and Techniques.* In Egypt, although the flat floor of the valley is built up of water-borne silt, the desert on either side supplies stone in plenty. In Middle Egypt the cliffs are of limestone, farther south sandstone takes its place, and in the district of the First Cataract—at Wadi Halfa—the rock formation through which the Nile bursts its way is of granite. The Egyptian builder, therefore, was able to use stone for his craft and to select the sort most suited to his purpose.

It is curious that in the earliest known case of stone being used at all—the floor of the tomb of the First Dynasty king Udy-mu, at Abydos—the material is not the local limestone but granite brought down-stream from Aswân; possibly it reflects the nostalgia of the southern conqueror! The work is rough, the blocks only slightly squared, and as a mere pavement it cannot be termed a building. In the Second Dynasty 'the first tentative use of stone in actual building was made'. In the Third Dynasty the royal architect Imhotep constructed for King Zoser at Saqqâra the Stepped Pyramid and the amazing series of temples round it, all of stone. So far no development of stone building has been found; the art springs into existence full-blown without any apparent origin, for the Second Dynasty work can hardly be regarded as leading up to the magnificent buildings of Zoser. Yet there must have been some connecting links between the poor little beginning in the Second Dynasty and the full flowering in the Third. None the less is it tempting to assume that in fact no such links ever existed and that the revolutionary change in Egyptian architecture was due to the individual genius of Imhotep; that certainly is what the Egyptians believed when they deified him as the supreme inventor. It is true that Zoser's architect seems to have had certain qualms, due to inexperience, about the stability of his

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columns, for he did not venture to make them free-standing but supported each with a buttress wall (Pl. 21, b); but the cutting and laying of the massive blocks show quite extraordinary skill on the part of the masons; it is indeed no exaggeration to say that the workmanship of the pyramid builders has never been surpassed in any country.

The size of the blocks, for instance, in the Great Pyramid of Khufu (Cheops) at Gizeh, together with the accuracy of their jointing, constitutes a problem which no scholar has yet been able fully to answer regarding the methods employed. Of some 2,300,000 stones in the building the average weight is two and a half tons, but the largest weigh up to 15 tons; these are of the local limestone, but the huge granite slabs which form the roof of the King's Chamber weigh nearly 50 tons apiece. The quarrying of such stones was of course laborious but, when once the method had been learnt, not essentially difficult. The top and one vertical face of the proposed block had first to be exposed, by mining if necessary, as it was for the finer qualities of limestone, and then a narrow trench cut outlining the block; in the case of limestone this would be done with copper tools, but for granite with a ball or hammer of some such material as diorite, held in the hand. Then wooden wedges were driven into wedge-holes cut along the trench; the wedges were soaked with water, and their expansion sufficed to break the block away from its bed, leaving clean faces for the start of the next blocks. Obviously this is a slow method, but what takes time and labour is the making of the trenches and wedge-holes, and since almost as much is needed to detach a small block as a large one, the quarrying of big stones is much more economical. From the builder's point of view also large blocks were preferable, if not essential; temples and pyramids were constructed on the dry-stone principle (in the pyramids a very small quantity of mortar was used in the horizontal courses, but only as a lubricant, not as an adhesive) and they simply could not have been built with small stones and no binding mortar; only big blocks would by their sheer weight assure solidity. On all counts therefore large stones were desirable. Nor was the difficulty of transport so great as might be supposed. Quarry-men and builders were skilled craftsmen, limited in number, but of unskilled labour there was no lack, especially during the three months of the inundation period when agriculture was at a standstill, and the hundred thousand men said by Herodotus to have been employed on the Great Pyramid could easily have been forthcoming. The blocks were dragged from the quarries on sleds, and the sled could carry one large block as easily as ten small ones. Water was poured in front of the sled runners, and on the surface of greasy mud the going was not too difficult, and the team of haulers, working under the foreman's lash, need never be short-handed; a Twelfth Dynasty tomb relief pictures the transport of a colossal statue (Fig. 78) which probably weighed about 60 tons, mounted on a sled pulled by gangs totalling 172 men. To raise the stones into position on the ever-rising building was also a manual task. They were not lifted, for the Egyptians did not use the

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pulley, nor are there any lewis-holes[8] in the blocks, though these commonly have bosses which show that levers were employed to manœuvre them. Against the stonework of the monument under construction there was built a solid ramp of crude brick (which was heightened with each course that was laid on the building proper) and up this ramp the blocks were hauled or rolled. After the building was completed the ramp would normally be re moved, but, as it happens, one such did until recently survive against the (unfinished) First Pylon of the temple of Karnak, and remains of others have been found against the pyramid of Meidum and that of Amenemhet I at Lisht.

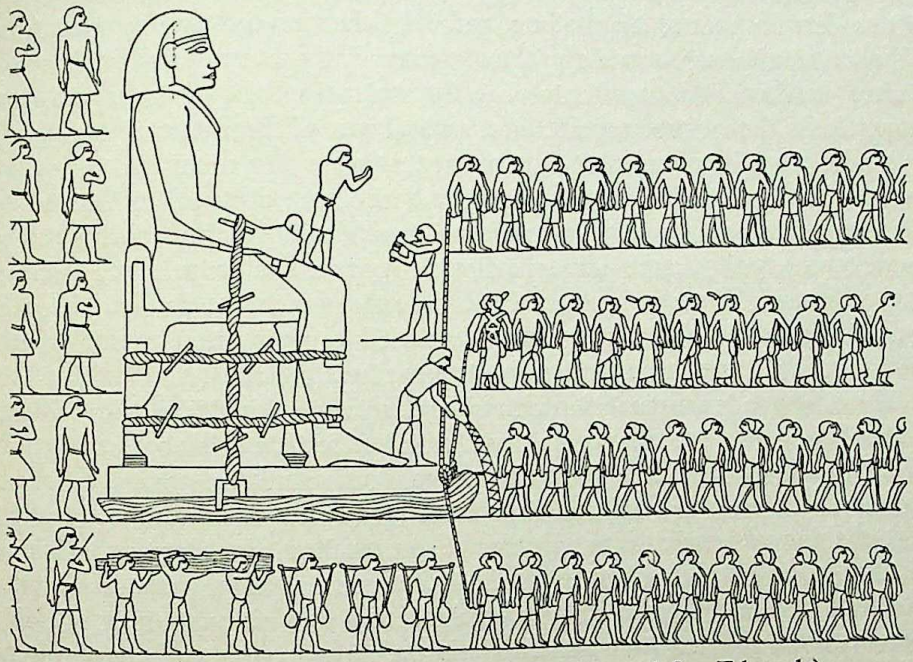

FIG. 78. The transport of an Egyptian colossus (after Edwards).

With a ramp, the difficulty was not great. Given a reasonable slope, an experienced foreman unembarrassed by machinery can, with twenty men, two stout poles, crowbars and a really strong rope raise a three-ton block in a very short time. Much more remarkable than the transport was the accurate dressing of the stones. The heights were standardized so that the top of each course presented an absolutely level surface as a bedding for the next course; but the vertical joints were often not at right-angles, i.e. either the front edge was not at right-angles to the base, or the side face of the block was not at right-angles to the frontage-line; it would seem as if the stones had to be assembled either at ground level or (in the case of a pyramid) on the flat top of the construction for the final trimming that would secure a perfect joint before they could be laid in the course. In any case, the finishing and polishing of the outer face of the stones was done after they were in position.

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All the stone-built tombs and temples of Egypt can be described as megalithic. That they were constructed after this fashion is not merely due to the economy effected by the use of large stones. According to the Egyptian belief, a man's survival after death was in large measure dependent upon the preservation of his earthly body in the tomb, and therefore upon the permanence of the tomb itself; a man built his mastaba or pyramid during his lifetime and naturally planned something that might well last for ever; the more massive the tomb the better his hope of immortality. Temples also, as being the houses of the eternal gods, ought to last for all eternity. The principle was so firmly impressed upon the Egyptian architect that temple roofs as well as temple walls had to be of stone, and even the fine timber imported from Lebanon might not be used for the purpose; in the early periods this was a serious handicap because limestone, the ordinary building material, was, owing to its fissile nature, useless for architraves of more than about 9-foot span; for a small building that did not matter, but a large temple with massive stone columns so closely set together would lose most of its effect. In the Old Dynasty granite was sometimes used and was certainly an improvement, but one that was dearly bought; fortunately for Egyptian architecture the builders of the Eleventh Dynasty discovered that the sandstone of Silsila could provide architraves that would span up to 25 feet without giving way, and it is with this that all the great temples of the later periods are roofed.[9]

The religious principle which insisted that a temple should be built of stone throughout[10] seems to have had a negative side also. There is not in the whole of Egypt a single instance of a dwelling-house being built of stone. There was indeed no objection to a lintel or a door-frame being of limestone, but that sort of thing was not constructional; the actual fabric of the house had to be of mud-brick only. And this applied to all classes. Pharaoh was, of course, a god, and the building destined to be the setting for his essentially god-like functions was properly more a temple than a house, so that the great 'palace' of Merreptah at Memphis or that of Akhenaton at Tell el Amarna could be stone-built (though the Memphis building has columns and doorway pylons of stone but mud-brick walls), but in those official buildings there were no residential quarters; the dwelling-house even of the Pharaoh was of mud-brick alone. Perhaps for a mortal to be housed in like manner to the immortal gods would have been an example of *hubris*, 'that reckless and defiant insolence which formed the matter of ancient tragedy and is at war with the harmonies of human life'; but whatever the reason the stone house was taboo. It is curious to find an echo of this in Sumer. There, owing to the lack of stone in southern Mesopotamia, all buildings were of brick. But the foundations of one of the earliest temples at Erech were of limestone brought laboriously from at least 60 miles away; at Eridu, the oldest of Sumerian cities, the wall enclosing the Ziggurat terrace was of stone rubble, and that may date from the al'Ubaid period; at al'Ubaid the foundations of the First Dynasty temple platform and the stairs leading up to it were of stone. At Ur

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the wall of the Ziggurat terrace, built in the time of the First Dynasty of Ur, had on its outer face four or five courses of heavy limestone boulders—and the interesting point about this was that the stonework was not there to give strength to the wall, was, in fact, not constructional at all, but was a mere skin applied to a core of mud-brick already *in situ*; it was a pious fraud, and one can only deduce that there was a tradition requiring the use of stone for the construction of the house of God, that normally burnt brick was considered an adequate substitute but that sometimes a more scrupulous builder conformed to tradition or compromised with it. Again, the burial-chambers of the Early Dynastic royal tombs at Ur were generally built entirely of stone or, at any rate, had some stone in their construction, whereas nothing of the sort is ever found in any lay building above ground. In Egypt then, where stone was available, it had to be employed for tombs and temples but was eschewed for private houses, while in Sumer, where there was no stone, it was none the less theoretically the proper material for tombs and temples, but for private houses no one would think of using it. The practice common to the two countries must be explained by a religious scruple also common to both.

In the other stone-using countries there was no such taboo. In Anatolia and in north Syria any building of importance would have heavy stone foundations which, carried up rather above the level of the house floor, served as a dry-course; in time this purely utilitarian function became secondary in that at floor level the rubble foundations gave place to ashlar blocks, usually of large size, about 3 feet square, which added much to the dignity of the monument. Later again the decorative character of the blocks was increased by their surfaces being carved in relief, so that by the thirteenth century BC there was fully developed the characteristic Hittite style of architecture in which the base of the wall is adorned with orthostats of limestone or basalt (the two materials sometimes used alternately) covered with reliefs or with hieroglyphic inscriptions picked out with colour. Such orthostats were originally constructional, as has been explained, but as their ornamental value outbalanced their functional purpose the solid block tended to reduce its proportions to those of a facing-slab; in the hands of the Assyrian imitators of the Hittite fashion the great reliefs carved in 'Mosul alabaster' which enriched the palaces of Nineveh and Calah were but a panelling quite irrelevant to the wall structure.

As a general rule this massive stonework of the northern builders was confined to a single course;[11] above that the wall was of half-timbered construction, the framework of stout beams filled in with stone rubble or with mud-brick according to the character of the countryside; thus on a north Syrian site such as Alalakh, in a plain formed of river silt, mud-brick was the natural material (Pl. 20, c), whereas in Crete, where stone is plentiful and soil is precious, rubble is invariably used. Incidentally, the palace at Knossos, whose style and construction alike are derived from the Asiatic mainland, is,

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owing to its state of preservation, by far the best illustration of the full development of the architecture of the northern school.

On most of the mainland sites the buildings are too ruinous to give evidence as to style, but what little survives generally points to an Anatolian origin. On the other hand it may fairly be argued that both the Minoans and their successors the Mycenaeans may have borrowed the principles of architecture but in execution improved upon their models. 'Cyclopean' masonry is common to Anatolia and to Greece, but the finely-fitted polygonal masonry of, e.g., Mycenae surpasses in quality anything that an Asian site can show; the vaulted galleries in the walls of Tiryns might have been matched by those of Boğazköy, and their crude strength is admirably suited to works of military defence, but, so far as we know, it was left to the Mycenaean builder to use the corbelled stone vault with the refinement that we see in the tombs of Ugarit, (Fig. 79), while the *tholos* tombs of Mycenae (even if it be held that they are in the line of descent from the domed shrines of Arpachiyah in the Upper Zab valley) have no parallel at all in Asia. It is curious that the palaces of Knossos and Phaetos boast no stone carving such as that of the doorway of the 'treasury of Atreus' at Mycenae, where the decoration of shafts and entablature is far too sophisticated to be experimental; both in the constructional technique and in the ornamentation of the underground *tholoi* the Mycenaeans had evolved something for which Crete afforded no precedent.

The true arch was unknown to the northern architect, but the false arch and the corbelled arch were employed for monumental works, while for smaller openings the flat lintel was normal, as indeed is to be expected wherever heavy timber enters freely into the construction. Columns were a regular feature; they were always of wood, usually resting on (not let into) circular stone cushion bases, and the shafts, both in Crete and on the mainland, were tapered, the diameter at the top being greater than that at the base (Pl. 21, c). Anatolia had by a very early date developed the *megaron* type of house, whose main feature is the great hall with its roof supported by four columns grouped round a central fireplace. Late Bronze Age examples of the *megaron* occur at Beycesultan, but at Kultepe one has been found going back as far as the twenty-second century BC and one in the first level of Troy is two centuries older still; it is clear that the prototype of the Homeric house is derived from Asia Minor. In some cases, too, the Asiatic *megaron* was entered from a deep columned porch which would seem to be the origin of the temple *in antis* of the classical Greek world. It may be that a modification of the traditional *megaron*, adapting the living-room to ceremonial and official purposes, produced the 'Hall of Audience' in which a long room is divided into two unequal parts by columns set between shallow buttresses or pilasters projecting from the side walls and supporting a wooden architrave; this is characteristic of north Syrian palace architecture, and again is found at Knossos.

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In striking contrast to the normal buildings of Egypt, the northern house or palace was of several storeys and, in a palace at least, the principal rooms were not at ground-level but formed the *piano nobile* on the first floor, often built over a series of magazines containing the palace stores. Consequently

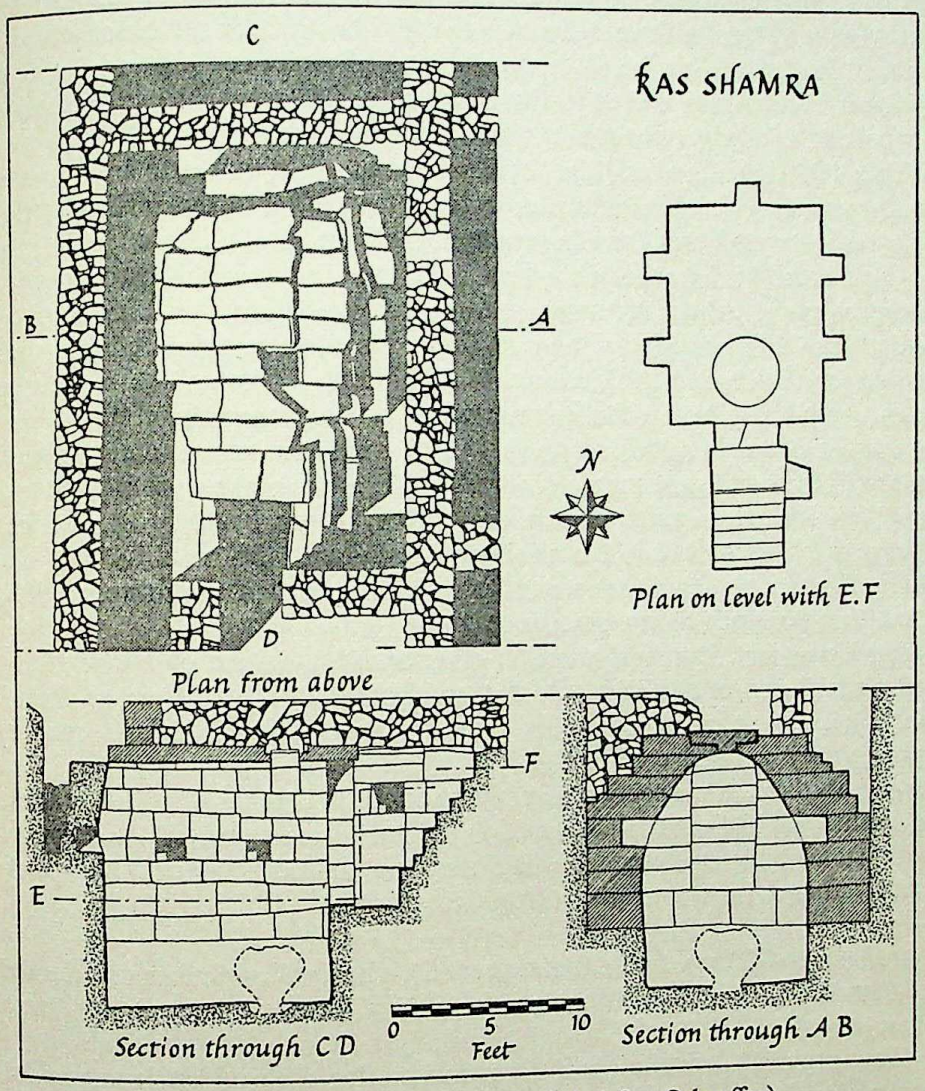


FIG. 79. Ugarit: stone vaulted tomb (after Schaeffer).

stairs were essential, and in the more important buildings a monumental staircase was a prominent feature; the most striking example of this is given by the Palace of Minos, in which the Grand Staircase, built of stone and wood with its ascending flight of columns, is a masterpiece of ancient architecture. Thanks to the plentiful supply of heavy timber and of stone both soft and hard, the Minoan architect was able to evolve a style wholly unlike anything

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to be found in the countries to the east and the south, approaching more nearly to the architecture of later Europe. In this he was helped by the climate. In Crete and in Asia Minor the heat and glare of the sun are less oppressive; consequently, while the Mesopotamian house was enclosed by high blank walls, the Cretan house or palace required windows and its façade was relieved by a system of fenestration which could be used for artistic effect, and (since the summer sun is still hot) columned balconies and awnings in front of the windows might give to the elevation a lightness which the massive stonework of Egypt could not rival; the little house-façades in coloured faience found at Knossos (Fig. 80) illustrate a type of domestic architecture unlike anything we should have expected to encounter in the ancient world. The reconstructed drawing of a section of the frontage of the Palace of Minos in Fig. 81 shows in what a modern spirit the Cretan architect dealt with the problem of achieving variety with a purely rectilinear building method and of combining dignity with grace. That this was a conscious effort seems to be proved by the wall thicknesses. Walls of stone rubble set in mud mortar, even though they have a timber framework and are strengthened by a facing of cement plaster, must be reasonably thick if they are to rise to any height; but at Knossos the great majority of the walls are less than 3 feet thick and very few indeed measure more than 4½ feet; it was because the builders recognized this as being the minimum consistent with stability that the domestic quarters above the second floor were constructed not in stone but in mud-brick, a much lighter material.

Brick was far more freely used in some of the mainland buildings which belong to the same northern school of architecture but the different material did not seriously affect the style; certainly the palaces of Alalakh, modest though they were in comparison with those of the Minoan sea-kings, are similar to them in conception and in execution; in the use of polished stone orthostats, or half-timber construction, of lime cement and of the columns with stone base and wooden shaft they are indeed identical. For brick architecture as such we must look to Mesopotamia.

*Brickwork—Mesopotamia.* Because in the river valley timber was scarce and stone non-existent all buildings, from the al'Ubaid period onwards, were built of brick.

At a very early date kiln-fired brick was introduced. Burnt bricks were used at first only for important buildings and then mostly in the foundations, but they might be carried up in the façade to a height of 3 or 4 feet above ground-level (thus obtaining much the same effect as was given by the stone orthostats of the northern school of architecture) and as the country grew richer they were more lavishly employed. It was quite a normal thing for a king of the Third Dynasty of Ur to pull down a mud-brick temple built by his forebears and to rebuild it entirely in burnt brick; and at about the same time bitumen imported from the pits at Hit on the upper Euphrates might be

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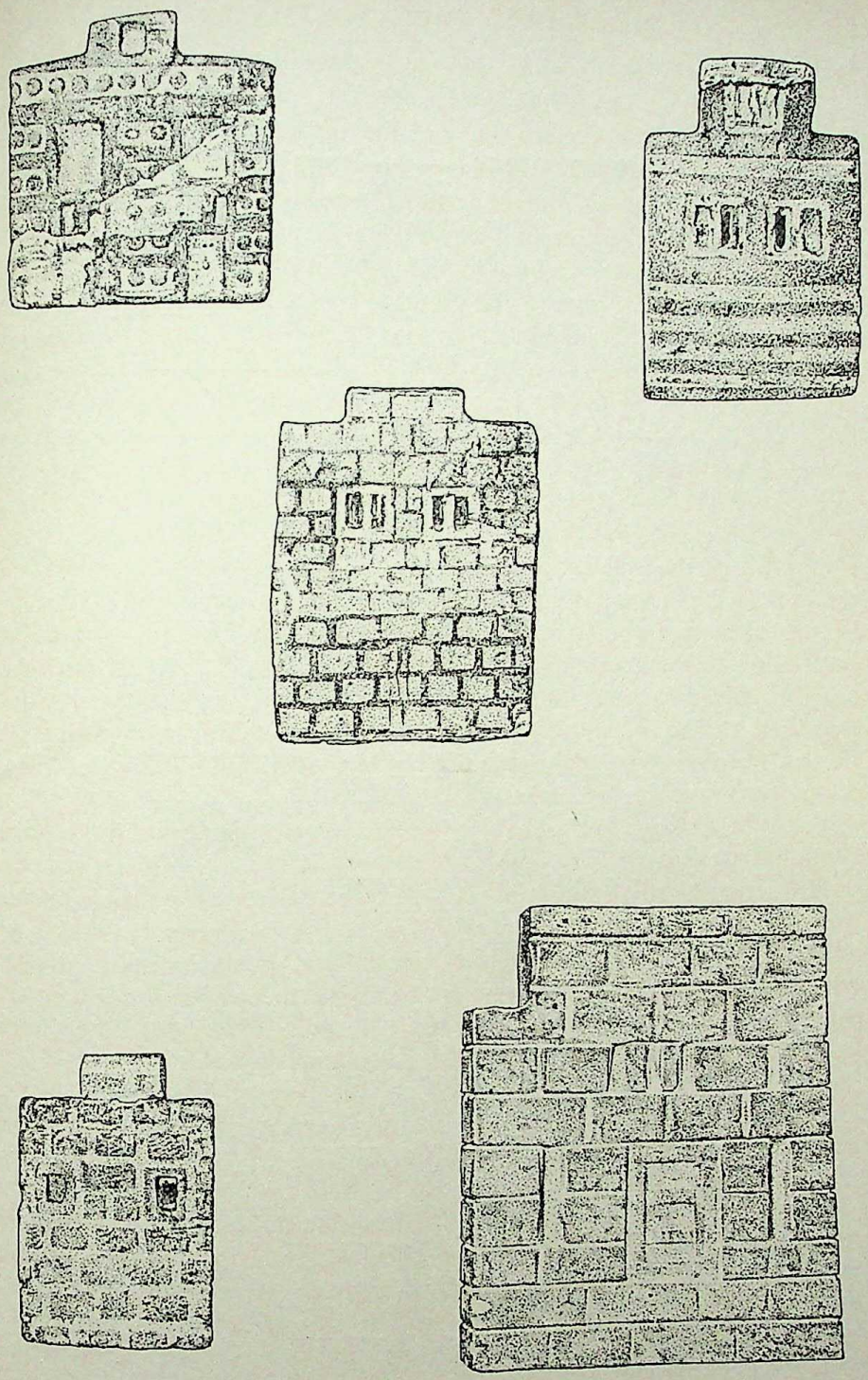

FIG. 80. Cretan faience house plaques (after a photograph by Josephine Powell).

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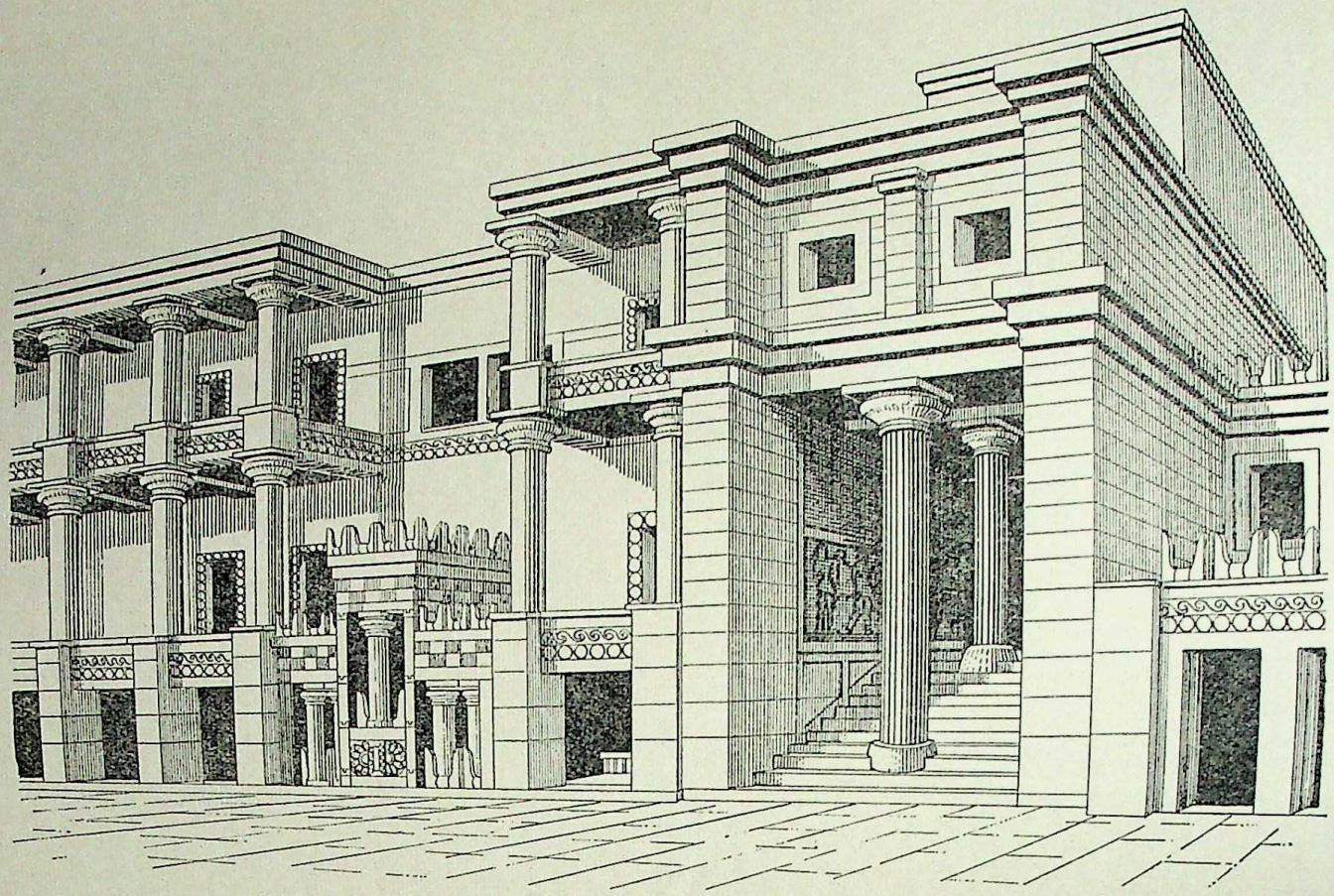

FIG. 81. Knossos, Palace of Minos, reconstruction (after Evans).

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substituted for the mud mortar regularly employed in earlier days; it had the great advantage of being a better adhesive and also waterproof. Bitumen, owing to its cost, was used only in temples and other buildings erected by the government, but building with burnt bricks laid in mud mortar became so general that under the Larsa kings (*c.* 2020–*c.* 1790 BC) the outer walls of private houses at Ur were of burnt brickwork at least to the level of the upper floor if not to their full height, and even the inner walls, in the case of the richer houses, up to 3 feet or more; the upper parts of the walls were of mud-brick. In and after the Kassite period burnt brickwork is rare —probably because in the nearer parts of the desert the camel-thorn which was the normal fuel for the brick-kilns had been exhausted and the cost of bringing in supplies from farther afield was prohibitive—and even the temples built by Assyrian and Neo-Babylonian rulers are generally of mud-brick throughout.

Brick construction does not lend itself to decoration. Mention has already been made of Warad-Sin's bricks moulded in relief to form a palm-trunk column (p. 531) and another Larsa king, Sin-Idinnam, seems to have relieved the monotony of a temple façade with crescents in moulded brick. In the fourteenth century BC the Kassite king Kurigalzu attempted a much more ambitious scheme: the whole front of one of his temples at Erech (and apparently of one at Ur also) was adorned with life-size figures of deities in the half-round built of bricks specially moulded. Inspired, probably, by the Osirid figures of an Egyptian temple, it was aesthetically an unfortunate experiment and was seldom repeated—indeed, the only other instance of it known is in a building at Susa set up by Kutur Nakhunti in the twelfth century BC, so that it may count as but a curious aberration. Usually the Mesopotamian architect was content to work within the limitations of his material, and he certainly exploited its possibilities to the full. Judging from what remains of the buildings we can say that from the Third Dynasty of Ur onwards the arch, the vault and the dome were in common use; in the treatment of wall surfaces closely-set half-columns divided by vertical T-shaped grooves—a tradition derived, as we have seen, from the primitive reed hut—were employed, apparently, where the wall's height was not very great; more often the brick construction was emphasized by substituting for the half-column rectangular buttresses, usually with a double salient and a central T-shaped groove (see Fig. 82); the object was to break up the blankness of the wall into panels whose proportions were calculated to accentuate the height of the building. That the Sumerian architect knew something about optics and deliberately aimed at a particular visual effect is clearly demonstrated by a well-preserved building such as the Ziggurat of Ur, set up by Ur-Nammu, first king of the Third Dynasty of Ur, in about 2100 BC (Fig. 83).

This great structure, which was in fact nothing more than the base supporting the shrine of the god Nannar, had the form of a stepped pyramid three

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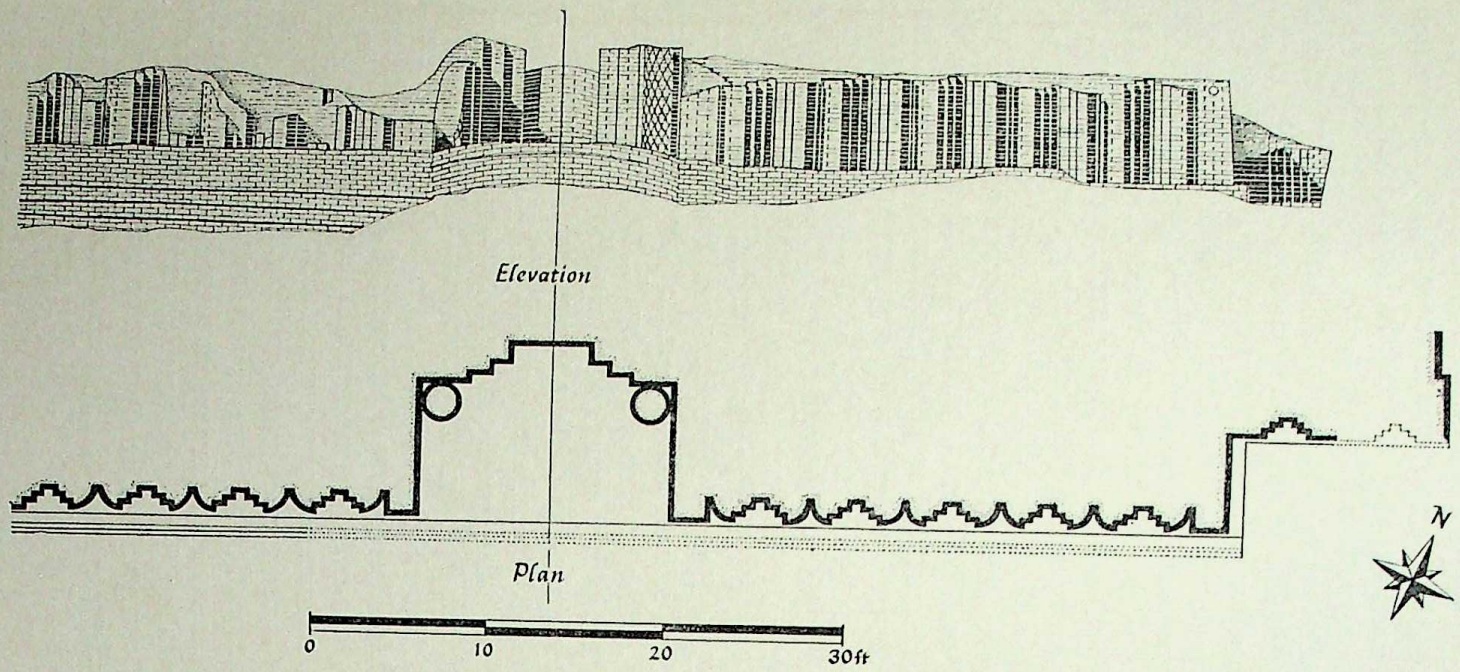


FIG. 82. T-shaped grooves in half-column walls.

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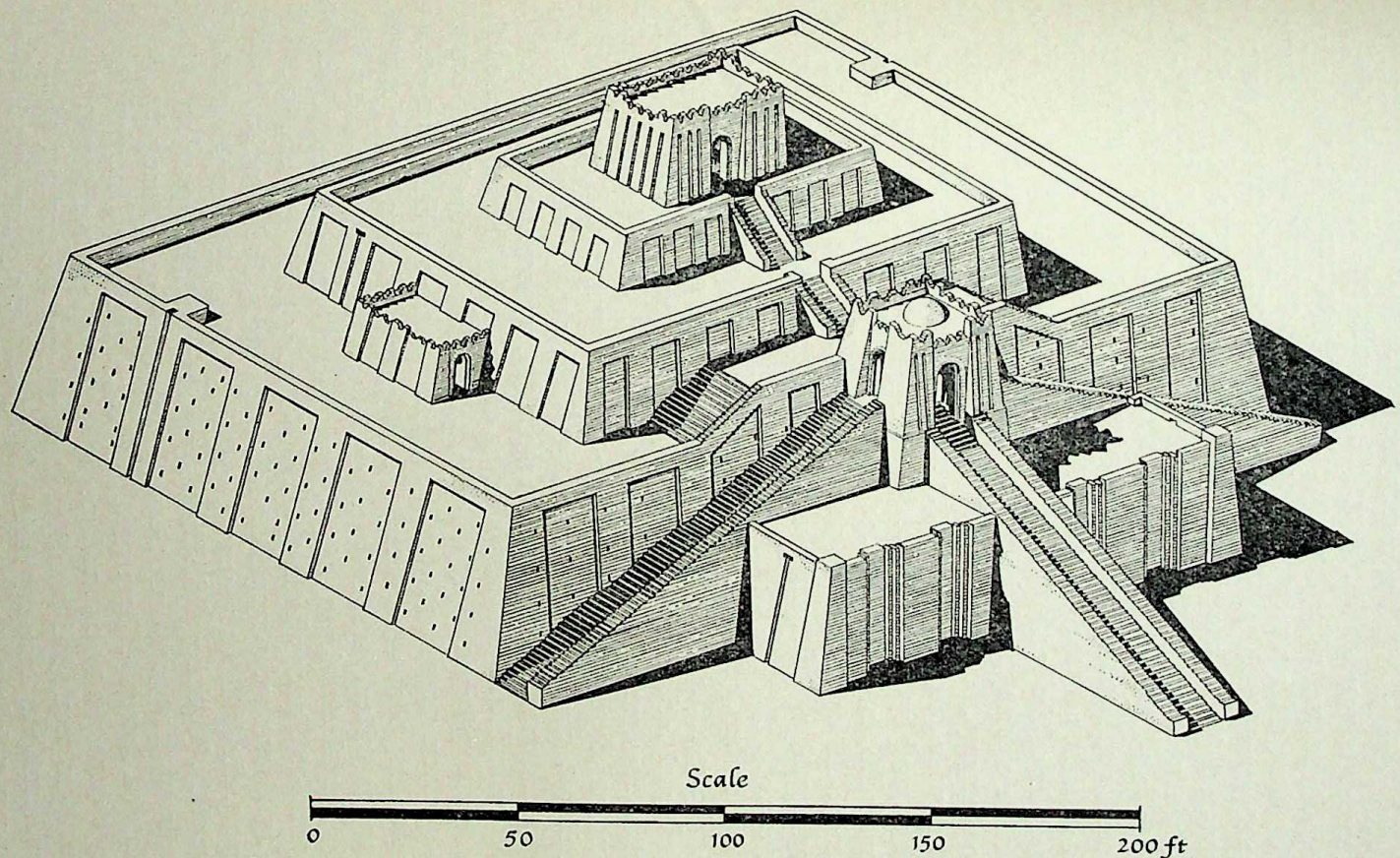


FIG. 83. Ur-Nammu's Ziggurat; reconstruction.

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storeys high; only the lowest stage is today in good condition, but of the upper stages enough is left to certify the reconstruction of the whole. The lowest stage measures 200 feet by 150 feet; its walls, relieved by shallow non-functional buttresses which accentuate their height, are built with a pronounced batter, their converging lines leading the eye upwards and inwards so as to fix attention on the shrine. The architect realized that the towering superstructure (which was essential to the religious purpose of his building) might so impress the spectator that its weight might seem to him too much for the 60-foot-high base, constructed as it was not of massive stones but of small bricks; and he set himself to counteract this appearance of weakness. The method he adopted was remarkable. The ground-plan is a rectangle, but the sides of the rectangle, instead of being straight, have a slight outward curve of 1:125, and the face of the brickwork, from the foot of the wall to the parapet, also has an outward curve of 1:100; it is the principle of entasis which the Greeks were to re-invent in the fifth century BC, but here it is used by the Sumerians of the twenty-second century and that with such delicacy as to produce a real optical illusion, precisely as in the Parthenon; the curves are not noticeable as such, but the building does gain an appearance of strength and solidity which is eminently satisfying to the eye.

The Sumerians, and the Babylonians after them, achieved a mastery of brick-building technique so complete that they had no need to look for any other material. A few early experiments, such as that of moulding bricks in cement, were never followed up. It is true that the size of bricks changed in different periods, but the changes were generally quite small, practically all the varieties coming within the limits of $11\frac{3}{4}$ inches to $13\frac{3}{4}$ inches square. The only serious departure from the norm is one that archaeologists have found it difficult to explain. With the beginning of the Early Dynastic period the ordinary flat brick is suddenly and uniformly replaced by the 'plano-convex' type—a brick rectangular in plan but rounded on the top like a bun—which continues in use for several centuries. It is a clumsy brick, unhandy for laying and requiring much more mortar than does a flat brick, and there is no practical justification for it. It has been suggested that it was introduced by newcomers to Sumer who in their own country had been accustomed to building in stone and so moulded bricks in the form of pebbles; but builders in stone prefer flat flakes to rounded pebbles, and no new peoples came into Sumer at the beginning of the Early Dynastic period. It is possible that the reason for the change was not technical but sentimental. During the Jamdat Nasr period Sumer had been ruled by foreign interlopers, and their régime seems to come to a violent end brought about by a nationalist revolt.[12] The Jamdat Nasr people had been great builders, and the first act of the new governments[13] was to destroy their buildings and set up new ones; for these 'plano-convex' bricks were used, for the first time, and perhaps they symbolized the complete break with the immediate past. Certain it is that long after

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practical considerations had brought the flat brick back into favour with builders a superstitious reverence was still attached to the bun-shaped type. Under the Third Dynasty of Ur, for instance, a king building a temple would encase in the angles of its walls a foundation-deposit consisting of a copper statuette of himself piously disguised as a workman carrying a basket of mortar, and a stone tablet inscribed with his name and the dedication of the temple; and the tablet was in the form of a plano-convex brick. A Kassite ruler of the fourteenth century BC, setting up a new altar, hid in its core miniature clay models of plano-convex bricks. In Assyrian times, and in the days of Nebuchadnezzar of Babylon, down to the sixth century BC, when it was the custom to bury under the floor of a building painted clay figures of the Seven Spirits that would ward off evil from the house, each figure was placed in a little sentry-box made of ancient plano-convex bricks which must have been dug up out of the Early Dynastic ruins deep underground. Just because Mesopotamian brick construction was of so high an order a technical aberration such as the introduction of the plano-convex brick calls for explanation; that its origin was a sentimental one seems less unlikely when we find the sentiment persisting throughout two millennia.[14]

Owing to the nature of the Indus valley the people of the Harappā culture were necessarily builders in brick. On two or three outlying sites beyond the valley's edge advantage has been taken of the local stone and walls are constructed with roughly-squared blocks; but the twin capitals, Harappā and Mohenjo-daro, are built entirely of brick. For kiln-fuel the Sumerians had to rely upon the light camel-thorn of the western desert, but a large part of ancient Sind must have been covered with thin jungle, and, as a result, kiln-fired bricks are used in the Harappā cities far more freely than in Sumer; crude brick was used for the cores of city walls and platforms and, perhaps, for the upper storeys of the poorer houses, but the bulk of the existing ruins are of burnt brick throughout. The bricks are for the most part of a standard size (11 by $5\frac{1}{2}$ by $2\frac{1}{2}$ inches), well fired; the laying is good, with proper attention to bonding, and there is a considerable use of bitumen mortar. In view of this it seems natural to see a connection between the cultures of Harappā and Sumer, and such is indeed not unlikely, but if the Indus valley was indebted to that of the Euphrates for its architectural techniques the loan was but a partial one. In the development of architectural forms Harappā got no farther than the corbelled arch; this is used for small spans only, such as house doors (not more than $3\frac{1}{2}$ feet), drains and ventilation openings; roofs were flat, resting on wooden rafters, and the true arch, the vault and the dome never occur. The Harappā people were skilful bricklayers, and that is perhaps the best that can be said of them; their aims were purely utilitarian and their architecture remained dully functional. In this branch of culture at least the achievements of the Indus valley were to exercise no influence at all upon historic India. The mere technique of kiln-fired brick may possibly have been handed down—though all connecting links are

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missing, and the possibility of re-invention cannot be ruled out; but of their house designs and of their town-planning nothing survived, and neither the timber constructions of Asoka's time (with their apparently Chinese connections) (see p. 459), nor the imaginative splendour of Dravidian stonework bear any relation to 'the blank brick walls and unadorned architecture' of Mohenjo-daro.

*Metallurgy*

Archaeologists, and historians following their example, have found it convenient to draw a dividing line in the course of man's advance towards urban civilizations between the Stone Age—the subject of the first part of this volume—and the Bronze Age with which we are now dealing. The distinction is a real one, but the vast gulf that separates the cultural status of Neolithic man from that of the developed Bronze Age was due not only to the use of metal as such but to the many other arts and activities, such as sculpture and carpentry, which accompanied and were encouraged by metallurgical knowledge, so that the expression 'Bronze Age' is in fact but a label denoting something far more complex than the words imply. Also, the line of demarcation is not easy to draw. This was recognized when scholars proposed to divide the early metal-using phase into a Copper Age followed by a Bronze Age; but although that would seem to be a natural order yet insistence on it leads to an inextricable confusion, for not only is it generally impossible to say when the one metal supplants the other, but in some instances the 'natural' order has actually been reversed in practice. An alternative suggestion was to intercalate between the Neolithic and the Bronze Ages a 'Chalcolithic' Age, defined as that in which metal (i.e. copper) was indeed known but, being extremely rare, was used only for small objects, ornaments, pins, etc., whereas tools and implements were still made of stone. This term can be employed with advantage, but it requires more accurate definition. It will then be seen that there is here no intercalation; the Chalcolithic Age, in spite of the fact that metal is used, is but a late phase of the Neolithic and has nothing in common with the Bronze Age, because the basis of distinction is not the existence of metal but man's knowledge of metallurgy.

Far back in the Neolithic Age, man had been accustomed to seek the raw materials for his handicrafts—flint, obsidian, chert, etc.—both by collecting the stones exposed on hill-sides or in stream-beds and by the more laborious but more remunerative process of mining. Apart from such utilitarian stones he would pick out some that appealed to him simply by their colour and could be used as ornaments; quartz and malachite, turquoise and lapis lazuli could be pierced to form beads and pendants, and because of their rarity and beauty might soon have attributed to them magic qualities which enhanced their value and made them objects of inter-tribal trade. The most attractive of the 'coloured stones' was gold, and this was readily found. For either gold occurs as nuggets of native material or else gold-bearing minerals enclose small

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but recognizable particles of comparatively pure metal; no smelting therefore was required, only, at most, the crushing of the gold-bearing ore and the separation of the gold particles from the enclosing rock; but in early days it was the alluvial nugget that drew man's attention. But when he proceeded to deal with the nugget as he dealt with other stones, trying to chip it to shape, he discovered that it was malleable; by simply hammering it he could make it take what form he chose. Sometimes, in some parts of the world, there would come to notice stones of a pleasing greenish-black or purplish-green colour which, when scratched or rubbed, showed underneath a tint not unlike that of gold, and these too proved to be malleable; with these man, instead of flaking and polishing his tool, could by hammering produce much the same result as regards shape but with a colour and a gloss superior to that of most of his worked stones. In the course of time accident showed him that the malleability of his native copper was increased by heating, and his implements began to assume forms more peculiar to metal instead of merely reproducing the traditional stone types. Up to this point man had contented himself with using on metal the processes which he had for ages past used on stone, bone or fibre; now, with the annealing of his native copper, he was making the first advance in what was to become metallurgical technique; but at that point he stopped. There was as yet no such thing as metal production. Man made use of the pure metal, gold or copper, that nature set ready to his hand, but he had not the least idea of what it was or of how a larger supply of it could be obtained; he was still in the Stone Age. The phase is illustrated in relatively recent times by the American Indian burial-mounds in the Mississippi plain. In this area there is found 'float' copper carried by the ice masses of the glacial epoch from the rich strata of Lake Superior (where the ferrous sandstone contains nuggets and lumps of practically pure native copper ranging in weight from a few pounds up to many tons) down as far south as the river mouth and deposited there amongst the detritus of the rocks. The Indians used this to make ornaments and implements, the latter mostly related to stone types, and such occur freely in the grave mounds. Not a single example has been either smelted or alloyed or cast; every one is hammered from the float copper. The Indians knew about the malleability of native copper and employed that alternate hammering and heating which we call annealing; for the rest, they cut and trimmed the metal with stone tools and smoothed or polished it by abrasion with stone; in short, it was to them only a peculiar kind of stone. Even the highly developed civilizations of the Maya, the Aztecs and the Mexicans, for all their astonishing goldsmith's technique, were entirely ignorant of metallurgy. Copper axes from Mexico and Ecuador seem to be of natural metal, hammered and annealed, and it is doubtful whether the Aztecs employed even native copper before the time of the Spanish conquest; until that date the New World was still in the Neolithic Age.

If we turn back to the Old World we shall find plenty of evidence for a similar Chalcolithic phase during which natural copper was used more or less



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freely according to the extent to which in the different countries it was available in surface deposits or was obtainable by trade. The total amount in use cannot have been great, so that it was definitely a luxury product, and it did not in any way oust stone as a working material. For very many purposes stone was indeed preferable to the soft metal, and the constant annealing required to keep a copper axe sharp involved more labour than the knapping of a fresh flint—but for such small objects as pins and bodkins it was invaluable, and copper ornaments were only less attractive than those of gold. Therefore the copper-producing lands found a ready market for their wares in the river valleys which had given birth to the great civilizations based on agriculture; Egypt and Mesopotamia gladly exchanged their surplus grain for the nuggets found by the barbarians of the hill countries, and although their technique in dealing with the metal was still that of the Stone Age yet they could, by their experience, so far appreciate its potentialities that they were ready, when the time came, to take advantage to the full of the discovery of metallurgy, the discovery which Professor Childe has described as the most dramatic leap in the history of mankind. For it was with copper that early man learnt to experiment in the use of metal, it was with copper that he discovered the miraculous transformation by fire of certain brightly coloured stones into a fusible metal which before he had regarded as malleable only, and the very method of its production taught him for the first time the real 'art and mystery' of the smith's trade. Not only could he now multiply indefinitely the output of copper but, with the enthusiasm of a creator, he could attack other types of coloured stone, produce other metals, mix ores or metals to obtain yet more useful alloys, and change the face of the earth by applying his metals to art and industry.

It is not possible to say precisely where the smelting of copper ore first began nor which people were responsible for its discovery. Obviously the discovery was made on the spot, somewhere where the ore was ready to hand, for no one would have bothered to export the crude stone in bulk before the possibility of extracting metal from it had been recognized. Again, it can have been made only by a people who disposed of the means for securing the heat required to smelt the ore. The old and often-repeated theory that the fusible quality of copper was found out through the accident of a copper tool being dropped into the camp fire and melting is a mistaken one; the temperature of a wood fire will hardly rise above 600–700° C., whereas copper does not melt at anything below 1,085° C., so that no such 'accident' could occur. The reduction of the oxides and carbonates of copper (the sulphides were not used until the middle of the second millennium) requires a heat of 700–800° C., again too much for the open camp-fire, and even the charcoal-burning pot-bowl or 'hole-in-the-ground' furnace will not give the necessary high temperature unless aided by the blowpipe or bellows, neither of which had been invented at so early a date. Experiments have shown that the only primitive furnace yielding the temperature requisite for the reduction of

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copper ore was the pottery kiln, but even so it would have to be a kiln of the type used by people making a really hard-fired pottery very different from the lightly-baked wares of most Neolithic societies. It has been suggested that the actual discovery was made by the accidental reduction in such a kiln of the blue copper frit or glaze which was certainly used by potters at a very early date; that may be, though the evidence we possess is not enough to prove the case; but in any event it would appear that the potter's kiln is the origin of the smelter's furnace.

Copper ore is so widely spread (see Map XVIII) that the mere occurrence of the metal constitutes by itself no argument for deciding the whereabouts of the first experiments in metallurgy. The archaeological evidence is more reliable, but it has to be remembered that the regular scrapping and re-casting of old tools at a time when copper was still an expensive luxury forces us to base our judgement upon what may be a very unrepresentative survival, and again the relative chronology of the different cultures is only approximately fixed.

The copper deposits in the desert east of the Nile valley were not worked by the Egyptians until the Twelfth Dynasty. The rich mines of Sinai were not exploited until the time of the early dynasties, e.g. by Sekhemkhet of the Third Dynasty,[15] which was indeed but natural, seeing that only a strong centralized government could have organized so elaborate an expedition and provided for its defence. Actually it is only in the Late pre-Dynastic period that tools and weapons of cast copper came into regular use in Egypt, and it can be safely assumed that true metallurgy was brought into the country from Asia in the Gerzean period.

If we turn to Asia the number of places in which copper ore is to be found seems at first sight more embarrassing than illuminative, and it is true that in a great many of them the ore was worked at least as early as the time for which we first have written evidence; but for the earlier periods, for the actual beginnings of the industry, we must rely upon archaeological data. In the last fifty years excavations have been carried out on a large number of Near Eastern sites whose stratified remains take us back well into the fourth millennium BC; the gradual development of metallurgical technique can be followed reasonably closely, and the progressive diffusion of metal types does at least suggest the direction taken by the spread of knowledge and therefore its ultimate source. It would seem quite certain that that source lies somewhere in the great mountain chain that stretches from eastern Anatolia through Armenia and Transcaucasia to the Caspian Sea and is continued through Khorassan and Bokhara; this, as can be seen from Map XVIII, contains the richest mineral deposits of the Old World, and, incidentally, its well-wooded mountain-sides supplied all the fuel that the smelter could ask. Practically all authorities are agreed that this northern region saw the start of true metal-working, but while some are inclined to locate it to the east of the Caspian Sea on the strength of the evidence given by such sites as Anau, the great number favour the western end of the range where exploitation

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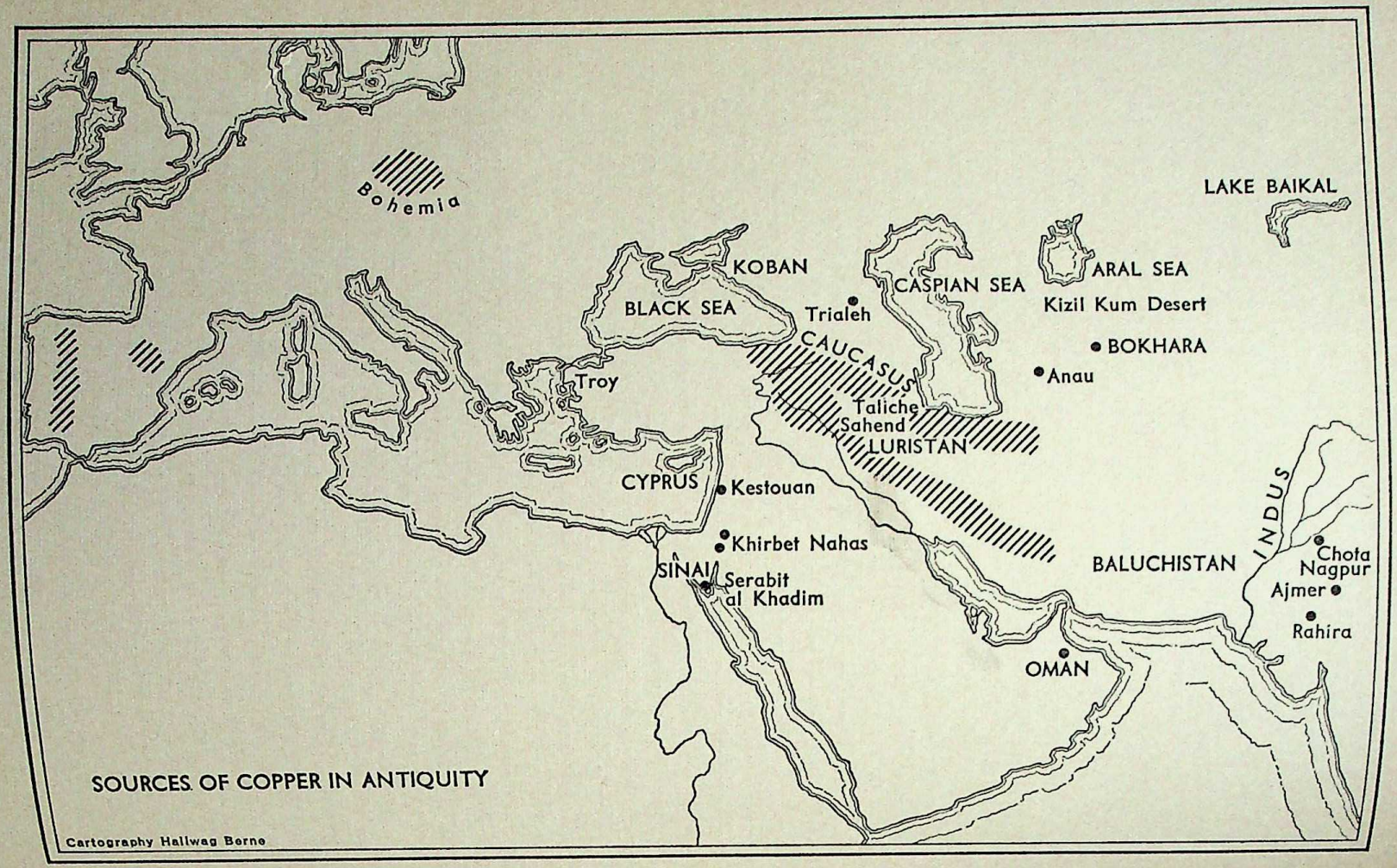


MAP XVIII

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certainly did begin early and was active throughout all historic times. Perhaps the strongest argument is that to which reference has already been made, the development of kilns able to generate the degree of heat required for the smelting of ore and the melting of copper. The Chalcolithic pottery of the eastern regions does not imply the use of such a kiln. On the other hand we have the al'Ubaid culture in Mesopotamia, which is Chalcolithic at its outset but produces copper castings in its later phases, characterized by a hard-fired pottery made in kilns whose heat was so intense (and incidentally so ill regulated) that the clay vessels were often fused together and vitrified. In northern Mesopotamia, from Carchemish eastwards through the Khabur valley to the Upper Tigris, we have the Tell Halaf culture which in time overlaps with al'Ubaid but may have begun somewhat earlier, also producing its fine painted pottery hard-fired in properly regulated beehive-shaped kilns of mud-brick; and to the later stages of this culture are attributed weapons of cast copper as against the hammered 'natural' copper instruments of its early stages. When we find that settlements of the Tell Halaf culture occur in the neighbourhood of Lake Van, in the heart of the copper-producing area, we are justified in concluding that the advance which these people did make from the Chalcolithic stage to the Bronze Age proper was due to their own invention rather than to any borrowing from hypothetical pioneers in Khorassan. Our necessarily vague chronology of the different sites does not warrant the assertion that the cast copper artifacts of Anau antedate those of Tell Halaf, and the Tell Halaf people had the ore ready to their hand and possessed the means for smelting it; the balance of probability therefore is in favour of metallurgy starting in eastern Anatolia.

When once the discovery had been made that the coloured stones could be transformed into precious metal the knowledge of it spread quickly. But the world had not reached the stage at which the publication of a scientific formula would automatically result in the general adaptation of a new technique; the miracle was still miraculous and the process by which it was performed was a complex one. Because it dealt not with nuggets of natural metal (the obvious supplies of which must by now have been well-nigh exhausted) but with ore which could be treated in bulk, mere collection had to be replaced by professional mining, and the miner's job was a full-time one. Pottery-making had long been a specialized profession; now, when the ex-potter was using his kiln for the more difficult and elaborate process of smelting and refining metal, he was yet more exclusively engrossed in 'the art and mystery' of his trade. Again, the smelter produced the actual copper in the form of ingots, but that took up all his time; the working-up of that copper into useful shapes involved a further subdivision of labour, and the smith came into his own; casting, hammering and annealing were an art in themselves. Here then were three occupations, all requiring special knowledge and technical experience, producing in common a commodity that commanded a ready sale everywhere and fetched high prices. Obviously the craftsmen would keep their

MAP XVIII

Cartography Hallwag Berne

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profitable secret to themselves for as long as they could; so far from publishing their formulae they would exaggerate the miraculous character of their art. They could, and did, export their finished goods far afield, but that meant paying middlemen's profits, and transport was difficult; local production and direct sales meant the highest gain. From the original centre, therefore, mining prospectors set out in search of new supplies of ore in places where their exported goods had already secured a market, and with the miners went the smelters and the smiths; the wide dispersion of particular types of tools and weapons which field archaeology has established is in some cases due to international trade but very often means the arrival of one of these bands of itinerant metallurgists bringing with them the fashions they had evolved at home.

Map XVIII illustrates the dispersion. Eastwards the line of advance inevitably followed the oriferous deposits of the mountain chain to Khorassan and Bokhara; from there the spread was in two directions, southwards into Baluchistan, whose mines very likely supplied copper and bronze to the people of the Indus valley, and north-eastwards by way of Bamian and the Kizil Kum desert; it must have been the extension of this line that brought metal to the knowledge of the ancestors of the Shang tribe of the Yellow River. In northern Persia the mines in the Tiyari mountains are certainly early (they are mentioned in Babylonian records) and to the east of those Mount Sahend and the Kara Dagh, producing easily-reducible carbonates, may well have been the source of the metal worked by the smiths of Luristan. Mesopotamia throughout nearly the whole of its history drew all its copper supplies from the north, though in the Early Dynastic period the Sumerian smiths profited by the finer ores from Oman on the Persian Gulf, apparently the Magan and Melukhkha of early texts. We have no knowledge of any exploitation in very early times of the relatively small deposits in Syria which were to be worked later (the bronze industry of Tyre and Sidon is thought to have made use of local supplies, and there are very rich veins in the coastal range south of Alexandretta) but here again import from Anatolia was easy. But at a very early stage prospectors from Asia Minor sailed across to Cyprus and there started an industry so important that the names of the island and of the metal became synonymous and the ancient Greeks attributed the discovery of copper to the Cypriot king Kinyras; from Cyprus the art of metallurgy passed on to Crete.

The westward advance was slower. This was the natural result of the very different levels of culture attained by man in different parts of the world. Countries like Mesopotamia and Egypt already in the Chalcolithic phase were ripe to derive full benefit from the free use of metal and—what is equally important—were able to pay the price of it; but at the end of the fourth millennium BC the barbarous tribes of Europe offered but a poor market to the metal-merchant. In Anatolia the early diffusion of copper-working was patchy, in spite of the proximity of the mines; there were pockets of relatively high culture as in the Halys basin and on the western sea-coast, and here local

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schools had been formed before the middle of the third millennium BC; but the mountain tribes could boast no more than casual imports of foreign-made copper tools and weapons. Through Troy (Troy II) and up the Danube valley merchants carried the new art into Europe a little before 2000 BC, into the valley lands of the Elbe and the Saale, and started the central European metallurgical industry; we find at the outset types which go back to Sumerian originals, but thereafter development was upon independent lines and new methods were evolved for dealing with the specific ores of central Europe.

This was indeed the normal course of events. The itinerant craftsmen could not keep their secrets for ever; they could hardly avoid employing local labour, and their apprentices, in the more civilized centres at least, were quick to learn the trade. By 3000 BC or very little after, Sumer, Egypt and Cyprus had their individual schools of metallurgy; Egypt started to exploit the mines of Sinai, the early Pharaohs thus securing the sources of supply and obtaining a monopoly of the metal trade of their country, while Sumer imported from Oman. The latter fact was of great import because the Oman copper ores contain both nickel and tin, so that the smelted metal is a natural bronze, objects from the royal cemetery at Ur showing as much as 14 per cent of tin and anything up to 2 per cent of nickel; since bronze is far more easy to cast than is copper the Sumerian metallurgist enjoyed a great advantage over the users of pure copper, such as the Egyptians, and produced finished goods which were technically far superior to anything made elsewhere. This early Sumerian bronze was accidental, not an artificial alloy; the existence of tin as a separate metal seems not to have been realized. On the other hand it is probable that the Sumerian smelters did discover, by experiment, that the best results were obtained by mixing in definite proportions what they supposed to be two varieties of copper ore; at any rate, we find that the tin content is much higher in an axe or dagger than in a toilet-pin; and it is possible that by the end of the Early Dynastic period, which saw the smith's technique developed to a pitch never excelled in later Mesopotamian history, they had recognized the difference between the copper ore and the cassiterite and even identified the latter with the 'stream tin' discovered in alluvial gold-working. But with the conquests of Sargon of Akkad, which put an end to the Early Dynastic period, bronze disappears and vastly inferior hammered axes of unalloyed copper replace the splendid bronze castings of the royal cemetery. Perhaps the Oman veins were exhausted; more probably political reasons cut the conqueror off from the country's old source of supply, and all ore had to be imported from the north, to which Sargon as a northerner would naturally turn: in the epic poem *The King of Battles* he is represented as leading his armies into the heart of eastern Anatolia to uphold the rights of Semitic merchants settled there, and these can have been none other than the middlemen of the copper trade. But the demand was now for bronze, and prospectors, metallurgists and traders struck out west in search of supplies, whether of tin or of cassiterite or simply of such mixed ores as Oman had yielded

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formerly; the mixed ores were duly discovered in Bohemia, and gradually an overland trade in them (or perhaps in tin only) was established between Bohemia and the Near East via the bridge-head at Troy. Rare though the alloy must still have been, the bronze castings from Alaca Höyük show that it was available in central Anatolia, and could be exported so far afield as Egypt, where bronze objects first appear sporadically in the time of the Middle Kingdom.

Later, about 1600 BC, two important discoveries were made. In the first place the metallurgists learnt how to smelt the sulphidic ores—a much more complicated process than had sufficed for the oxides and carbonates—and thereby put vastly greater stores of copper at the smiths' disposal, and in the second place they succeeded in reducing cassiterite separately, obtaining tin-metal which could be mixed with copper to form bronze; and now the tin content could be regulated so as to make different alloys suited to different purposes. The amount of tin required could not be got from the alluvial deposits of western Asia, which had never been considerable and must by now have been virtually exhausted, so again the prospectors set out, this time by sea as well as by land. Granted that our chronology is still vague, it is at least probable that the people of the El Argar culture had already begun to exploit the tin deposits of north-eastern Spain and had made independently the discovery of the technique of bronze alloy; in any case, whether because of information received or by mere good luck, it was here that the Aegean sailing-vessels put in and the prospectors, having found what they sought, opened up the Spanish tin-trade which was to supply the Middle East throughout the Bronze Age.

But long before this date the primitive metallurgists, miners and smelters, had in their search for copper come upon other ores which by similar methods could be made to produce other metals. One of these was gold. In the early days all the gold used by goldsmiths had been alluvial. The rich treasures from the royal cemetery at Ur are all of alluvial metal, often with a high percentage of silver, and since the petty kings of Ur are not likely to have been more wealthy than others the total supplies available must have been very large. There is no means of identifying the source, and one can only suppose that a great many river valleys contained auriferous detritus which was so thoroughly worked in antiquity that no trace of metal can be found today. Assyrian texts vaguely refer to the highlands of Asia Minor, and we know of deposits in the Choruk basin near Artvin in Lazistan which may have supplied the famous Chalybes; other references to the Khabur area and to 'Chachu', possibly in the Kharput neighbourhood, suggest that the whole of the Anti-Taurus range, seamed as it is with torrent-beds, may have kept the gold-prospector busy with 'the dust of its mountains'. Even today the gravel bed of one of the rivers in the Amanus mountains near Antioch contains a fair amount of gold dust, but most, like the famous Pactolus 'rich in gold', were exhausted in the Bronze Age, and the same is probably true of the north Persian rivers. As the

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local supplies gave out more and more gold had to be imported for the needs of the great Mesopotamian rulers; one important source may have been the west coast of Arabia where the Nabataeans and the Debae controlled fairly rich alluvial deposits, and the south-west, the modern Yemen, which may have been the Ophir of the ancient world; caravans thence could pass by way of Nejd, itself a gold-producing area, and Kuwait into Babylonia. Gold may have come from India also, by way of overland trade and perhaps by sea as well, brought not directly but by cabotage; the bill-of-lading of a ship discharging at Ur in the reign of Sumu-ilum of Larsa (*c.* 1925 BC) mentions gold and precious woods and ivory, and for the latter two India is as likely a source as the east African coast.

But by far the richest gold deposits of the Middle East were in Egypt, extending almost the entire length of the eastern desert; there there can be seen more than a hundred ancient mines, and the valleys in the schists are full of alluvial workings. By the time reef-mining had supplemented the output of the pan-washer, and the crucible could be used to refine the metal separated from the quartz by the hand-quern, the Pharaohs of Egypt, who held the monopoly of the mines, had virtually a corner in gold-production. The opening-up of the First Cataract for boat traffic by Mernere, the advance by Sesostris I to the Third Cataract, and the fortification of the Second Cataract by Sesostris III were all steps aimed at the safeguarding of the southern or Nubian goldfields. Gold was indeed essential to the fabric of the Egyptian empire. The astonishing treasure found in the tomb of Tutankhamen, an ephemeral ruler in a time of national decadence, witnesses to the vast hoards of precious metal stored in 'The Double Gold-house' of the royal treasury; and all was at the absolute disposal of the Pharaoh. With the 'Gold of Praise' and the 'Gold of Valour' he rewarded the services and assured the loyalty of his officers of state, and with gold he hired the mercenaries who formed the hard core of the Egyptian army. The foreign policy of Egypt was backed by gold. If Pharaoh raided Syria, towns captured by him would of course be systematically plundered and thereafter made to pay tribute, and in the early days of conquest south Syria provided him with a considerable amount of gold brought up, presumably, from western Arabia; but where his conquests stopped and frontiers had to be protected against powerful neighbours it was the treasury, not the war office, that gave protection. The Kassite rulers of Babylon, the kings of Assyria, of Mitanni and of the Hittites were constantly demanding gold and yet more gold from the inexhaustible coffers of the Pharaoh. If Amenhotep III sent twenty talents to Assur-nadin-akhi of Assyria, the latter's son saw in this good reason to demand another twenty from Amenhotep IV, and at once the Kassite king Burna-Buriash II, as overlord of Assyria, claimed as much again; Dushratta of Mitanni writes: 'Let my brother send gold in very great quantity, without measure, and let him send more gold to me than to my father. For in my brother's land gold is as common as the dust.'



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Silver makes its appearance quite early. In Egypt it is found, together with lead, in the Middle pre-Dynastic periods; in Crete in the Early Minoan; in Troy I it occurs with lead and in Troy II is common and the silver is exceptionally pure; in Mesopotamia silver is already known in the al'Ubaid period, and in the Jamdat Nasr period lead is in very common use.

It is almost certain that Asia Minor was the first and for a very long time the principal source of both metals. Almost certain too is it that while some of the early silver is really electrum, mixed with varying percentages of gold and copper, and may be regarded as a by-product of gold-working, by far the greater part was extracted from lead. The mountains of eastern Anatolia contain immense deposits of galena; this is the easiest of the lead ores to work and the Anatolian galena is particularly rich in silver, some of the lodes in Karahissar yielding as much as 600 ounces of silver to the ton of lead (1·84 per cent). Primitive metallurgists who had mastered the secret of dealing with copper ore and were ready to experiment with other 'coloured stones' that might bring them profit would almost inevitably try their hand with galena, whose bright metallic appearance and high specific gravity could not fail to excite their curiosity; the separation of the silver from the lead is the natural result of the smelting process, and it would not be long before the workers noticed that they were getting two metals instead of one.

Of the two metals, lead was not of any great use to early man. It had none of the qualities required for weapons or tools, and although it was sometimes employed for making small ornaments the effect could not be called decorative. In Mesopotamia it enjoyed a brief vogue in the Jamdat Nasr period, the graves of that age very commonly containing leaden bowls or tumblers, but none of later date has been found; we get some sheet lead in one of the royal cemetery graves, late in the Early Dynastic period, and it was used for solder in a First Dynasty of Ur relief from al'Ubaid; the Cappadocian tablets (*c.* 1950 BC) describe the export from Ganes in eastern Anatolia of two qualities of lead, 'pure' and 'loose' lead, in considerable quantities, the price of it being one-quarter that of silver, and the metal seems to have been very plentiful in early Assyria; but, so far as we can tell, its contribution to culture throughout the Bronze Age was very small. Early Hittite bronzes sometimes contain lead which seems to have been added deliberately and the Egyptians occasionally used it instead of tin for bronze castings of a ceremonial or votive character, i.e. those which were not to serve any practical purpose, and in and after the Eighteenth Dynasty manufactured lead glaze; but there is much to be said for the theory that lead was valued more as the source of silver than for its own sake.

For silver was prized from the outset for its beauty and its brilliance. Pliny says that, compared with gold, silver 'is brighter and more sun-like', but because of its white colour its general association is with the moon; in Mesopotamia it is the metal of Sin, the Moon-god, in Egypt the bones of the Sun-god Rê are fashioned of silver; for charms and amulets therefore it was

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held to be most efficacious. Because Egypt had no silver of her own (the galena ores of the eastern desert are rich in lead but valueless for silver production) and had to import all her supplies from the north, silver was prone to be more costly in Egypt than gold; as late as the Hyksos period it was worth twice as much, and although in the New Kingdom the conquest of Syria brought vast quantities as loot or tribute the gold–silver ratio was still only 5:3. In lands nearer to the sources of supply the relative values were very different: in Akkad, in the region of Sargon, gold was eight times the price of silver, at Ur, under the Third Dynasty, ten times and in the reign of Bur-Sin seven times only (perhaps there was a shortage of supply due to troubles in Armenia) but for a long time after that the gold–silver ratio of 1:10 seems to have remained fairly constant. It would appear that Egypt's advantage in possessing the richest goldfields of the Old World was to some extent set off by the price she had to pay for the silver which she coveted. The beautiful examples which we possess of Egyptian silverwork dating from the Middle Kingdom prove that the goldsmiths of the Nile valley could do full justice to the imported metal—in later times, as the Tell el Amarna letters prove, they were exporting manufactured silver goods to Cyprus; but it was in Asia that the best use was made of silver, if only because there the craftsmen had better opportunities to learn and to exploit its qualities. The amount in circulation must have been very great. It should be remembered that in the damp and salty soil of Mesopotamia silver tends to be resolved into soluble chlorides, and an incalculable proportion of the silver objects buried there have in this way disappeared completely; but at Ur in the tomb of Queen Shub-ad alone there were forty-eight vessels of silver and in the tomb of A-bar-gi the silver objects registered numbered ninety. In the humbler graves both of the Early Dynastic Age and of the Sargonid silver rings, pins, ear-rings, etc., were of common occurrence; Sargon indeed led his victorious armies to 'the mountains of silver', thereby securing free access to the mines. The metal was so valued that already by the time of Manishtusu, king of Kish (*c.* 2400 BC) it was a recognized standard of exchange, one *mina* of silver being equivalent to 60 *gur* of grain. Under the Third Dynasty of Ur sums of silver are lent at various rates of interest and silver objects such as rings and vessels are regularly paid in to the palace as revenue. It is likely that in the case of silver, as of gold, certain standard types of ornament, rings, ear-rings, etc., were also standardized in respect of the purity of the metal and therefore could be accepted as currency; thus Abraham when buying the cave of Machpelah weighs out 400 shekels of silver, 'current money with the merchant', and Jacob buys a field at Padan-Aram for 'an hundred pieces of money', just as the betrothal-money for Rebekah was 'a golden ear-ring of half a shekel weight and two bracelets of ten shekels' weight of gold'. Refined silver as distinct from crude silver is mentioned in the Cappadocian texts of *c.* 2000 BC and in Troy II there were found six ingots of very pure metal each weighing exactly 40 shekels of the heavy *mina*; obviously these are media for

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exchange; it has even been suggested that small silver plaques marked with the sign H for the larger and I for the half-type, found at Knossos and at Enkomi in Crete and dated to the Late Minoan period, were actually coins. Silver was useful only for ornamental purposes and for such purposes was (except in Egypt) but a cheaper substitute for gold. Its use involved no new technique but only that already developed by craftsmen working in the more precious metal (it is worth noting that in the grave of Queen Shub-ad at Ur there were one gold fluted tumbler and more than twenty silver tumblers of identical form, two oval gold bowls and three of the same type in silver); in view of this we may perhaps say that the most important contribution to the progress of civilization made by silver lay in its employment as an exchange medium, and so in its encouragement of international trade. The mere accidents of survival and discovery do not enable us to say to what extent—if at all—stamped ingots like those from Troy II continued in circulation; the next example, a bar weighing exactly one *mina*, found at Zinjirli, dates to the close of the eighth century BC, at which time it seems to have been usual for various cities to stamp silver as a guarantee of refinement. If the logical step of issuing a regular coinage was not taken earlier it was probably due to the fact that there was no central government strong enough for its guarantee to be internationally recognized, and in the meantime the stamped ingot served the purposes of the trader well enough.[16]

Just as it has been insisted that the Bronze Age begins with the smelting of ores and does not include the Chalcolithic Age in which natural copper was worked more or less on the stone technique, so too the Iron Age begins with the production of hardened iron—'steel'—the only form in which the metal was superior to bronze and so would naturally replace it. The point of departure is not the first use of iron as such, but the metallurgical discovery which made iron really useful.

The earliest iron objects of which the authenticity is undisputed are made of meteoric iron treated, as were other native metals, by hammering, and possessing therefore no metallurgical interest; such are the pre-Dynastic beads from el Gerzeh in Egypt, a Sixth Dynasty lump from Abydos found by Petrie with a hoard of copper objects, a thin blade set as an amulet which is perhaps of Old Kingdom date; from Byblos we have iron set in the bezel of a gold ring found in a royal grave; from Mesopotamia, remains of an iron object from a grave of the Jamdat Nasr period at al'Ubaid. Meteoric iron is widely spread over the earth's surface and a meteor was always likely to attract attention, so that the utilization of the natural metal is not surprising; but the smelting of it required a degree of heat far beyond the capacity of any primitive furnace, and the technique of working meteoric iron remained that of the Stone Age. On the other hand the recognition of the celestial origin of the meteor caused men to ascribe to the metal mysterious and occult qualities; this religious awe persisted long after iron was in general use—indeed, it survives until the present day in many popular superstitions—and strengthened that belief in

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uncanny powers which in so many lands had made of the smiths a people apart, social outcasts perhaps, but to be feared.

It is possible that the production of man-made iron began, in Egypt,[17] as a by-product of the refining of gold, for the gold gravels of Nubia have an iron content of over 65 per cent, and when this sand was washed for gold about half of the residue left in the pan would be magnetite; and since the Egyptians melted the gold in crucibles in a reducing atmosphere the crucible at the end of the operation would contain liquid gold at the bottom, rich iron slag at the top, and in the middle a layer of pasty iron ready for forging. The iron amulets and model tools found in the tomb of Tutankhamen and other examples of iron jewellery may have been made of such local metal; but the total amount produced by the gold industry would have been extremely small; it was valuable because it was rare, but because it was only soft iron and would obviously be far less serviceable than bronze for tools or weapons there was small inducement to exploit its discovery on a large scale.

The evidence of archaeology, of folk-lore and of religion is conclusive on the point of iron being a late metal. The fact that iron-working not only implies a knowledge of the techniques used in dealing with other metals but also requires special techniques of its own (and special tools as well) confirms its late appearance but is in addition a strong argument for its diffusion from a single centre. It has been argued that that centre was in eastern Europe, in the Hallstatt region, the richest of all in spathic iron, which is the ore best adapted to the experimental methods of the early metallurgist, whence the knowledge spread southwards into Asia Minor. But the theory is not supported by the archaeological evidence and most authorities are agreed in accepting the classical tradition according to which iron-working, as we have learnt to understand it, i.e. the 'steeling' of man-made iron, originated somewhere in the Hittite realm of eastern Asia Minor, probably in the Armenian district, and so, by land and by sea, made its way westwards and northwards into Europe.

The smelting of the Anatolian ores certainly began at a fairly early date, for examples of man-made iron appear in the first half of the third millennium BC not only in Asia Minor itself, at Alaca Höyük, but in northern Mesopotamia, at Tell Chagar Bazar, at Tell Asmar and at Mari. The latter were of course imports, as were later examples found at Ur, at Ras Shamra in northern Syria and at Gezer and Tell Mutesellim and Beth-Pelet in Palestine, these ranging in date from 2100 to about 1350 BC. All the metal thus exported was soft iron, produced directly from iron ores in a bloomery. The spongy mass resulting from the smelting was re-heated and hammered into compact blocks which could be sold to the smiths; it was malleable when heated white-hot, but it was not fusible, so that, whereas the craftsman could cast bronze into any form he pleased, iron could be shaped only by the laborious process of continued heating and hammering. But a wrought-iron tool thus fashioned will not keep its cutting-edge for long; it requires constant

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annealing, quenching and hammering, so that its maintenance cost in terms of labour and of skill is much greater than that of bronze; it could not, therefore, rival bronze in the world's market. Thus we may expect to find, and we do find, iron objects dated far back in the Bronze Age, but the Iron Age could not begin until man had invented the 'steeling' of iron.

It is impossible to say precisely when or where or how that invention was made. The earliest literary mentions of iron are in a letter from Mari mentioning an iron bracelet which came as a gift from the king of Carchemish (implying that the metal was a rare luxury) and in an Alalakh tablet in which King Ammitaku claims that he has captured from those who opposed him booty including four hundred weapons of iron. As Ammitaku reigned somewhere around 1750 BC the date is unexpectedly early, at least if we are to assume that the 'weapons' were necessarily of steel and not of soft iron; it is, however, possible that the 'weapons' were sacred symbols in the form of daggers and were not intended for use in war.

The invention of the 'steeling' process is most likely to have been made in the Caucasian area where the crude metal was produced; this would agree with the classical tradition regarding the Chalybes as the original workers in steel, and it is certainly supported by the fact that for two centuries and more after 1500 BC the Hittites controlled the steel trade and were the only people from whom the Pharaohs of Egypt could obtain a niggardly ration of the precious metal. The Hittite monopoly applied to the eastern Mediterranean, and it may be that knowledge of the new technique spread very quickly in other directions, into central Europe (the earliest iron finds in northern Europe, at Seeland and Bornholm, are ascribed by some authorities to the fourteenth century BC) and possibly via the Balkans to Noricum; but even in Europe the Iron Age proper cannot be dated much earlier than 1200 BC. In northern India the Rigvedic hymns seem to make it clear that steel was known at the time when the hymns were composed; iron, *ayas*,[18] is described as both malleable and ductile, tough and strong; it must have been introduced before—but not necessarily long before—1000 BC, but it took another five hundred years to popularize it in the Dravidic south.

In China iron, as a precious metal, may have been used for jewellery and ornaments as early as the close of the Shang Dynasty.[19] It had come into ordinary use by the Chankuo period, and iron farm-implements have been found belonging to the time of the Warring States (fourth–third centuries BC) from which fact it can be deduced that the metal was then common and had been introduced very much earlier; but in any case the Chinese Bronze Age continued until long after 1200 BC.

The discovery of the secret of steel-making must have been due to accident, and, as the literature of a much later age proves, its manufacture remained purely empirical. It was not necessary to understand the metallurgical processes involved; experience showed that in certain conditions iron acquired new and valuable properties, and all that was required was to observe those

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conditions and to reproduce them. The primitive smith when forging a bar of wrought iron had to re-heat it often, and if he achieved this heating by embedding his bar in the heart of a charcoal fire and maintained the temperature by using a blast insufficiently strong to penetrate the heart of the hearth the outer surface of the bar would become carburized to a depth depending on the length of the treatment; he would find that his tool had a steel case-hardening which added enormously to its efficiency. Repeated experiments would show him just what it was that had produced the unexpected result, and he would in future re-create the conditions of his first success, not putting a theory into practice but simply modifying his working routine. Most of the ancient iron weapons and tools, therefore, exhibit this cementation or carburization of wrought iron, but the carbon content varies throughout the mass of the object, the purified bloom being partially and unevenly steeled; the process had been applied to the outer surface and the cutting-edge only, the core remaining relatively unaffected.

An alternative method of carburizing iron—the 'poling' system—must also have been discovered by accident. The primitive smelter, using some form of basin bloomery-furnace, might try to expedite the separation of the bloom from the slag by stirring the fused mass with a wooden pole; if his attempt was prolonged the end of the pole, charred by the molten metal in which it was immersed, would carburize it sufficiently to bring about a noticeable improvement in the metal's quality. In the course of time the workman would trace this improvement back to its source and would utilize the accident and improve on it by deliberately mixing freshly-cut wood with the ore and so producing steel. This 'poling' method is the prototype of the 'green withy smelting' which was used by the pre-Roman Celtic iron-workers in the Weald of Kent.

That the method of making steel should have been discovered nearly three hundred years before the superior metal was produced in such quantities as to oust bronze in the manufacture of tools and weapons is not surprising. The technique had been developed by a relatively small professional group of craftsmen whose interest it was to keep the secret to themselves. In doing this they were helped by the fact that the centres of production where they worked were far removed from the markets in which their goods were sold and lay for the most part in areas difficult of access; moreover, they were themselves a people apart, isolated by the superstitions that attached themselves to the mysterious alchemy whereby stones were transmuted into the hard white metal that daunted even the elemental spirits. Amongst all ancient peoples[20] we find smith-gods. Vulcan and Hephaestus, Brahma and Agni and Indra, Ea and Girru, Loki and Wieland, and the early smiths share something of their superhuman character, as do the Telchines and the Dactyloi of Greek tradition; it would be dangerous for ordinary mortals to pry into their mysteries. As has been said, the smelter's methods were empirical, and he needed a vast amount of experience before he could learn

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so to regulate his practice as to be sure of producing steel in any considerable bulk or with uniform success; in the meantime it paid him better to restrict his output and to maintain a high price-level. When a thirteenth-century Hittite ruler writes, 'There is no good iron in my "sealed house" at Kizzuwadna. It is a bad time to make iron, but I have written ordering them to make good iron. So far they have not finished it. When they finish it I will send it to thee', he is not necessarily making false excuses. 'Steeling' was still a chancy, hit-or-miss operation, and the Hittite rulers, who were the regular exporting agents, could not be sure of a punctual delivery. It is, of course, possible that for security reasons the armaments trade with foreign countries was strictly limited and that the Iron Age was well advanced in Anatolia some time before it started in other Asiatic lands. Otherwise we must assume that the manufacture of steel made very rapid progress in the second half of the thirteenth century; for the Peoples of the Sea who flocked down into Syria and Palestine just before 1194 BC were armed with the new metal, and the Philistines from their first appearance were using iron not only for weapons of war but also for agricultural tools.

*The Techniques of Metal-Working*

If we bear in mind the slow development of the Neolithic Age, when the *floruit* of a particular type of flint instrument has to be reckoned in centuries if not in millennia, we may well be astonished at the speed with which man mastered the art of metal-working. During the relatively short Chalcolithic stage there is still the hesitancy of slow-witted savages trying to apply their traditional ideas and techniques to an alien material, but from the moment the discovery of ore-smelting was made new skills and inventions crowd one upon another with the exuberance of a world in its springtime.

The work of the smelter is difficult and that of the smith impossible without a forced draught for the kiln and the hearth. To raise the temperature of the glowing charcoal a fan or a blowpipe would both be effective, but the latter had the great advantage of directing the blast air on the precise point required, and for that reason it was indispensable for fine work such as that of the goldsmith. Illustrations of the blowpipe in use (Fig. 84A and B) in Egypt are in Old Kingdom reliefs and a blowpipe is perhaps the origin of a sign in a Susa text of the Uruk period (Legrain, DP. Vol. xvi, p. 31), but we may be sure that its use goes back to the first days of metal-working, just as it persists up to the present time. For large-scale work the blowpipe is scarcely adequate, and at an early date it was supplemented by the bellows. The oldest form, the skin-bellows, seems to have been evolved in the Near East (or perhaps in Central Asia); the goatskin bag with its nozzle fitted into one leg and a slit which could be opened and closed for letting in the air seems to have been introduced in the third millennium BC (at Tello in southern Sumer nozzles found near a furnace dated to about 2100 BC) and remained the standard type for a long while; the bellows of Hephaestus' forge as

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described by Homer (*Iliad* xviii, 468) were of this sort, and so probably were those of the Tegean forge described by the Pythian oracle (Herodotus i, 67). In Egypt a more elaborate form came into use by the Eighteenth Dynasty

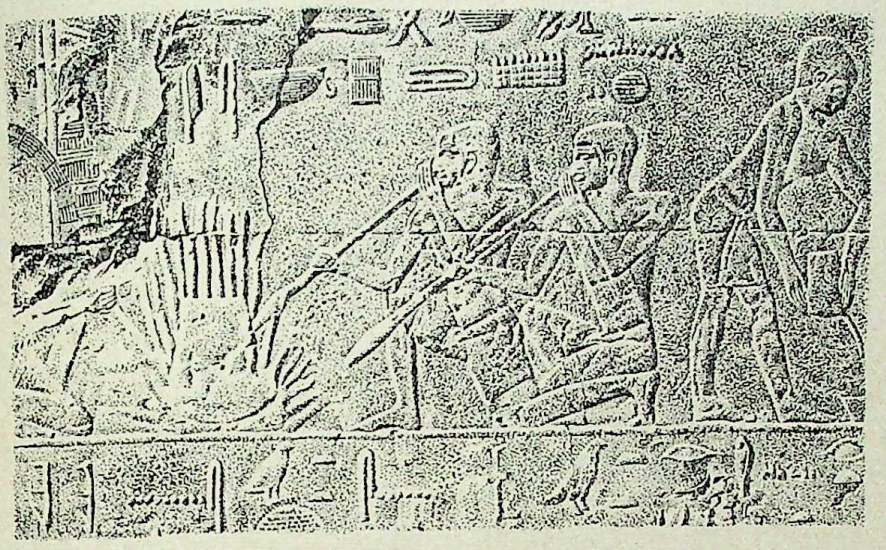

FIG. 84A. The blowpipe in use, detail from relief on the tomb of Ti at Sakkarah.

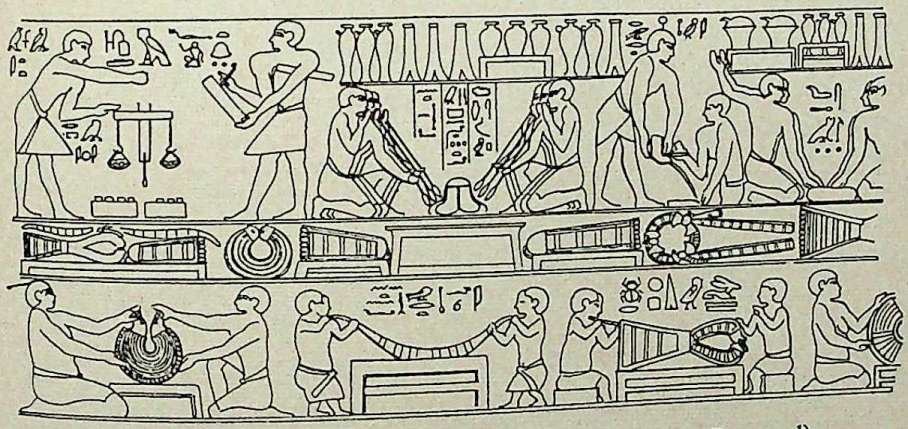

FIG. 84B. Metal-workers' shop, Old Kingdom (after Breasted).

and is represented in, for example, the tomb of Rekhmirê (Fig. 85); this is the dish-bellows with solid chambers probably of earthenware and a skin moved by strings; in southern or eastern Asia, man invented yet another form, the pump-bellows, with a piston moving inside a wooden or a bamboo cylinder; an intermediate type, the dish- or drum-bellows with a loose diaphragm fitted over a solid chamber, worked either by hand or by strings or sets of sticks, was developed apparently in India and later spread thence

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into Africa where it is still in use. Blast-air was necessary if the metal now available was to be of any service, and human ingenuity was quick to answer the challenge; even if we grant that the simple skin bag was the earliest form of bellows and inspired the rest, yet the local variants, each meant to be an improvement on the original, testify to the quickening effect of the metal age on man's imagination.

To some extent, the craftsman was content to carry on his new trade of metal-working with old-fashioned tools, the reason being that he found them

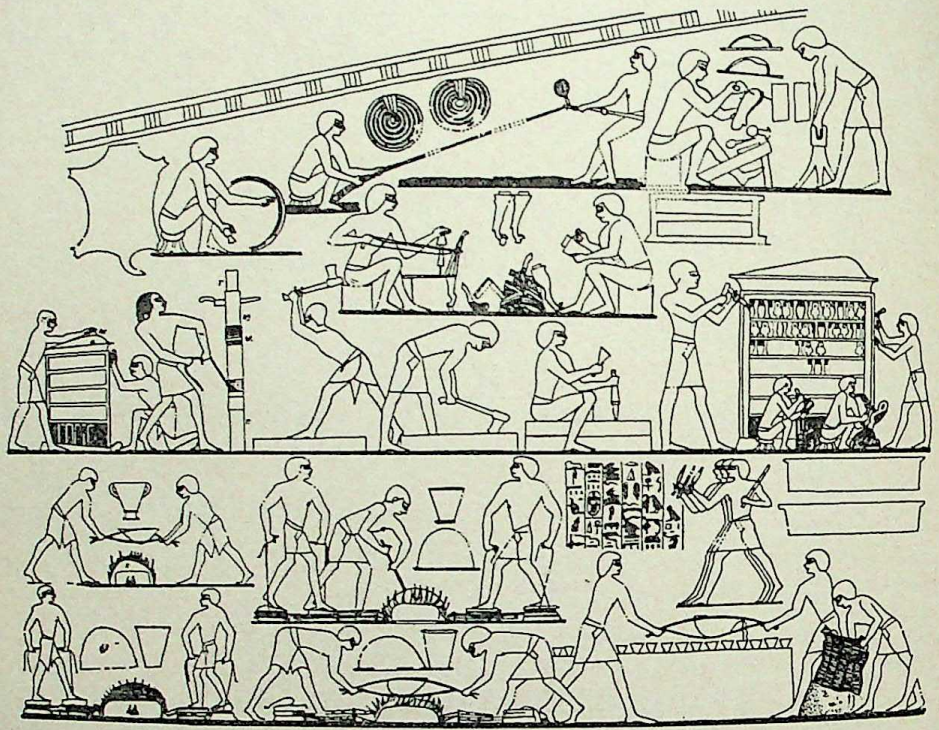

FIG. 85. Leather workers, cabinet makers, and pottery makers, tomb of Rekhmirê (after Cottrell).

adequate. Throughout the greater part of the Bronze Age the hammers used by the smith were of stone and without handles; such are represented in Egyptian reliefs, and goldsmiths' hammers of polished haematite have been found at Ur; these differ very much in size and shape, each adapted to a different purpose, just as the skilled worker of today will have as many as twenty hammers to be used as occasion demands. But almost the first things to be made of metal were tools; the wood-worker asked for knives and saws, the metal-worker required chisels, and everywhere chisels are found in the lowest Bronze Age strata; with his stone hammers and his bronze cutting instruments, with an anvil and, generally, with bronze tweezers for gripping the hot metal on which he was to work, the smith was equipped for his task.

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The vast hoard of metal objects from the royal cemetery at Ur—the earliest that gives us a general conspectus of the metal-worker's achievements—shows that by the first quarter of the third millennium BC the Sumerian craftsman could do very nearly all that can be done by the modern goldsmith and could do it almost if not quite as well. One tool, the modern snarling-iron, he did not know; lacking steel, he could not engrave bronze, though he did sometimes engrave gold; he had not learned the spinning of metal bowls—the earliest example of that technique seems to be an Egyptian bowl of the Eighteenth Dynasty; he could not weld copper or bronze or gold because he could not get the right temperature (the earliest welded joint known is on an iron head-rest from the tomb of Tutankhamen, *c.* 1350 BC, but Anatolia must have discovered the technique earlier than that) and, except in the case of gold leaf, he could not manage cold pressure-welding because he could not get sufficient pressure per square inch. But in the field of pure craftsmanship, in sinking or raising sheet metal into bowl or vase form, in repoussé work, in chasing, in inlay, he had nothing to learn (Pl. 22). He was familiar with the use of stamps and dies; he would cast gold or bronze not in the open one-piece moulds of the early days but in closed moulds of two or more pieces—this for solid casting, or, to save metal, by the *cire perdue* process, the most sophisticated of techniques. The joining together of metal plates by means of copper rivets, a process illustrated by handled bowls from the royal cemetery and later on by statues of cattle from a temple at al'Ubaid of the time of the First Dynasty of Ur, *c.* 2600 BC (Pl. 23, a) and in Egypt by the life-size statue of the Sixth Dynasty Pharaoh Pepi I, is a fairly obvious utilization of the malleable quality of the metal; but more commonly joints were made by soldering. Solder may be defined as 'a metal or alloy whose melting-point is lower than that of the metal or alloy to be soldered, which may be run in between the parts to be joined to fasten them together'. The use of solder, therefore, implies not indeed any abstract chemical knowledge but at least a recognition, gained from experience, of the fact that certain alloys will melt at lower temperatures than others and can be used for brazing. But only experiments continued over a long time could turn the observed fact to practical advantage. It is true that with a copper-tin alloy the melting-point is lowered in almost direct ratio with the percentage of tin; but though gold alloyed with 18 per cent of copper melts at a heat of 878° C. instead of 1,063° C., yet with any further increase of the copper content the melting-point rises; and the same is the case with a silver-copper alloy where the melting-point is lowest when the copper percentage is 28 and rises sharply thereafter. Judging by the actual objects that have come down to us, the Sumerian metal-worker of 2700 BC could undertake a soldering job—i.e. hard-soldering—with complete confidence; it was no longer a case of hit or miss: he knew from experience precisely what alloy would give the desired result and could be used without damage to the object to be soldered. The most surprising evidence for this is given

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by a few gold objects from the royal cemetery decorated either with open filigree work of fine wire (cut, not drawn) soldered on to solid back-plates or with 'granulation', minute beads or grains of gold arranged to form patterns; the difficulty of this is that the flux when heated tends to displace the grains and the solder clogs the fine texture of the grain- or wire-work. The secret of the technique employed by the Sumerians, by the Egyptians of the Twelfth Dynasty and afterwards by the Etruscans was lost, and recovered only in the 30's; it is delightfully simple. The gold background is painted with a mixture of fish glue, a copper salt such as copper hydrate [$Cu(OH)^2$] and a little water, and the beads or filigree are arranged while the glue is wet, any plain parts of the background being cleaned up before firing. When heated, the copper salt turns to copper oxide and the glue is carbonized; the carbon combines with the oxygen in the copper oxide and goes off as carbon dioxide, leaving the finely divided metallic copper in the join; so delicate is the process that the grains are in no way 'flooded' by the solder. Again one must beware of attributing to the early goldsmith a chemical knowledge which was certainly far beyond his ken, but careful observation and controlled experiment (the first elements of science!) were needed to give birth to the empirical knowledge which was the 'mystery' of his trade. The same ingenuity in profiting by experience is shown by the treatment of electrum. The gold used by the Sumerian smith varied much in quality, ranging for the most part between 14 and 22 carat, i.e. with a gold content of from 58 per cent to 91 per cent and silver from 40 per cent to 7·7 per cent and a maximum of 2·3 per cent copper; this is precisely what one would expect of native alluvial gold, though a few examples in which the silver outweighs the gold may be of artificial alloy. Where the silver content was such as to affect the colour (as in the case of a spear-head, gold 30·3 per cent, silver 59·37 per cent) the Sumerian adopted the same trick as did the makers of 'pinchbeck' gold in Victorian England; the finished object was soaked in brine, which would dissolve the silver from the immediate surface, leaving a spongy gold which was then burnished (perhaps with some acid; the Victorians used strong ale) and made a casing of pure metal, the core remaining virtually white.

That metallurgical technique should have developed to this extent in the comparatively short period of time between the beginning of the Bronze Age and 2700 BC bears witness to the extraordinary impetus given to civilization by the discovery of metal. Throughout the rest of the Bronze Age the metal-worker did little more than exploit the methods invented by the date of the royal cemetery. There is no evidence to show in what particular region those inventions were made, nor indeed does that greatly matter, for any new technique was likely to spread fairly rapidly; even if travelling smiths did not start manufacture in the areas which they visited, the mere export of finished objects would soon be followed by their imitation. The parallel development in Mesopotamia and in Egypt, the two countries best docu-

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mented for our study, makes this evident. Thus, in the royal cemetery, the cheaper beads are made of gold foil laid over bitumen; the more difficult operation of true plating, gold leaf on copper, is common in the Sargonid Age; and it appears in Egypt at about the same time. A few objects from the cemetery illustrate in simple form the inlay of gold in bronze, a tradition carried on in Mesopotamia by the splendid silver and electrum vase of Entemena found at Tello; this art was practised in Egypt, but it reached its zenith in the amazing polychrome dagger-blades from Mycenae which prove that Homer's description of the bronze shield of Achilles with its golden vines trained over silver poles, the grape-clusters of niello, the tin fence and the ditch of blue-black steel did no more than justice to the Achaean craftsmen in metal. Similarly the rather tentative experiments of the Sumerians in cloisonné work were to culminate not in anything produced in Mesopotamia but in the pectorals of the Twelfth Dynasty (Pl. 23, b) jewellery hoard found at Dahshur in Egypt. The manual skill of the Egyptian craftsmen in the Early Dynastic period was such that they could perfectly well have copied and in time have improved upon imported models of inlay or cloisonné work, or might have invented the process for themselves; but some of the metal techniques could not have been acquired in that way but must have been learnt from personal instruction. If bronzes from Mohenjo-daro were cast by the *cire perdue* process the fact can only be explained as a result of direct contact between the Euphrates and the Indus valleys in the time of Sargon of Akkad; just as there were Indian business men in Sumer so Sumerian smiths can have travelled eastwards and instructed the local craftsmen in the secrets of their trade. The *cire perdue* process, as well as that of casting bronze in sectional moulds, was known to the Shang tribe when the Shang state was an oasis of civilization in the middle of a barbarous China. The Chinese metal-worker was indeed a complete master of his material. The mere size of some of the great bronze vessels (Pl. 14, c) cast by him was such as to challenge the technical powers of the metallurgist of any age, and while the delicate relief that covers the surface shows the most sensitive appreciation of the qualities of his material the details of high relief, often produced into the round, are a triumph of developed technique. He was not an artist only, but an all-round workman. No deposits of usable ore are known to exist anywhere in that region, and the finding at Anyang of pieces of malachite, slag mixed with charcoal and pottery vessels apparently used in refining suggests that some at any rate of the copper used was produced locally, but as the cast vessels are made of an alloy containing as much as 17 per cent of tin it would further appear that the Shang people mixed the ores or the metals deliberately for the production of bronze. It is, of course, possible that while a certain amount of local smelting of copper was practised yet more was imported and that the bronze at any rate came to Anyang ready-made; certainly the knowledge of how to work it must have been derived from the west. The remarkable thing is that the Shang bronzes are,

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as castings, technically superior to those made in China at any subsequent period of its history, which surely implies a long apprenticeship in the art; the forms in which the vessels are cast are typically Chinese and can in some cases at least be traced back to those of the earthenware vessels of Neolithic or Chalcolithic north-eastern China, and they are decorated with motifs which had their roots deep in the life and thought of the Chinese people. Artistically then, the Shang bronzes are wholly independent of any western traditions; if the technique was originally borrowed, as we are driven to suppose, that had happened so early that by the time of the Shang Dynasty the craftsmen had evolved a style essentially their own and essentially Chinese.

The general lines of the northward and westward expansion of metallurgy have been traced already (see Map XVIII). At the outset the technique was borrowed and fashions were set by imported models, but in a shorter or a longer time local schools arose to satisfy the demands of local tastes and habits. The objects from the Alaca Höyük tombs, dating from a little before 2000 BC, illustrate this mixed parentage; technically they must be classed as provincial, falling far short of the perfection achieved by the Sumerian goldsmiths and bronze-casters, but typologically they owe nothing to Sumer. The treasure of Maikop in the Kuban province also derives its technique from the Sumerian, but the art is related rather to the Anatolian, though with a difference which makes it truly individual. Of the later development of the Anatolian school very little is known; a powerful bronze statuette from Boğazköy, so far resembling the stone relief of the warrior in the King's Gate of the city that we can describe it as definitely Hittite and probably of the fourteenth century BC, is so closely related to various bronzes found in northern Syria that we must assume a common Hittite-Hurri school of metal-casters; but from which of the two elements the inspiration came it is not possible to say.

The country in which metallurgy originated was not likely to be that of its higher development; the latter must needs depend not upon the local possession of the raw material but upon the cultural level of the country's inhabitants. The comparatively barbarous peoples of the Caucasus were fully occupied with the mining and the smelting of the metal; they made easy money by its export, and while they could themselves make the simple tools that their manner of life required, anything more elaborate could be purchased from their clients. The civilized peoples such as the Sumerians had more sophisticated needs, more imagination and more leisure to perfect their technique; in manufacture therefore the producing centres lag behind.

At Trialeti in the tableland of the Lesser Caucasus, east of Tiflis, Russian scientists have in recent years excavated a number of rich barrow tombs of the Late Bronze Age as well as a number of smaller and earlier tumuli which illustrate a remarkable local school of metallurgy. Some of the objects found here link up with those of the Kuban graves and of the Maikop

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treasure north of the Caucasus, and on the other hand they show connection with the contents of graves in the Talyche cemeteries of Azerbaijan, on either side of the Russo-Persian frontier on the west coast of the Caspian Sea, and also with many of the heterogeneous bronzes that have come from the plundered graveyards of Persian Luristan. This school, or, it would perhaps be better to say, this chain of kindred schools, can be traced back to a reasonably early date, the Middle Bronze Age here seeming to start about 2200 BC; but in each case the dates can be determined only by analogy with Sumerian types. The fact is that all of them are largely derivative, later in point of time than the Sumerian and, in point of style, dependent upon Sumer. That original motifs and forms are introduced cannot be denied —such are to be expected where the craftsmen come from a different stock with different surroundings, and they are of great value as documents for the history of local cultures. But so far as can be told at present the east-Caucasian schools were in the end sterile; they played no part in the history of invention and they exercised no influence upon the art of later times. Kuban, it is true, may rank as a precursor of 'Scythian' art, but Luristan remains little more than a curiosity.

It was from Anatolia, as we have seen, that metallurgy reached Europe, to some extent through Caucasia by way of the Russian steppes but for the most part by the well-established trade-route through Troy and the Danube valley. About the middle of the third millennium BC the true Bronze Age began in central Europe, Bohemia leading the way thanks to the association there of copper and tin ores; Bohemia and Hungary developed a European school which soon included the whole of the northern part of the Continent and the British Isles; Cornwall and Ireland could provide the requisite tin and copper, and Ireland had in addition rich supplies of alluvial gold, so that in time Irish goldwork found its way into the markets of the eastern Mediterranean. But the output of the European metallurgists was limited. Of the sparse population, the peasantry had little need of metal tools and no means wherewith to buy them—they still relied on stone axes and hoes and on flint knives and sickles, and their chiefs wanted only trinkets for their womenfolk and for themselves arms to maintain their positions or to extend their authority; the only specialized bronze tools current were those of the metal-workers themselves. And the metal-workers were for the most part not natives of the several European countries but itinerant smiths passing from one land to another, attaching themselves for a time to one or other of the local chieftains and moving on as soon as the local demand for their goods was satisfied; that is why the early Bronze Age in Europe shows so striking a uniformity. As Childe has said, 'A regular trade in metal linked up the whole of Central Europe from Upper Italy to the Hartz Mountains and from the Vistula to the Rhine into one economic system'; and the method by which this result was achieved is explained by the record of the people whom Schaeffer calls 'the Torque-wearers'.[21] At Ugarit, on the north

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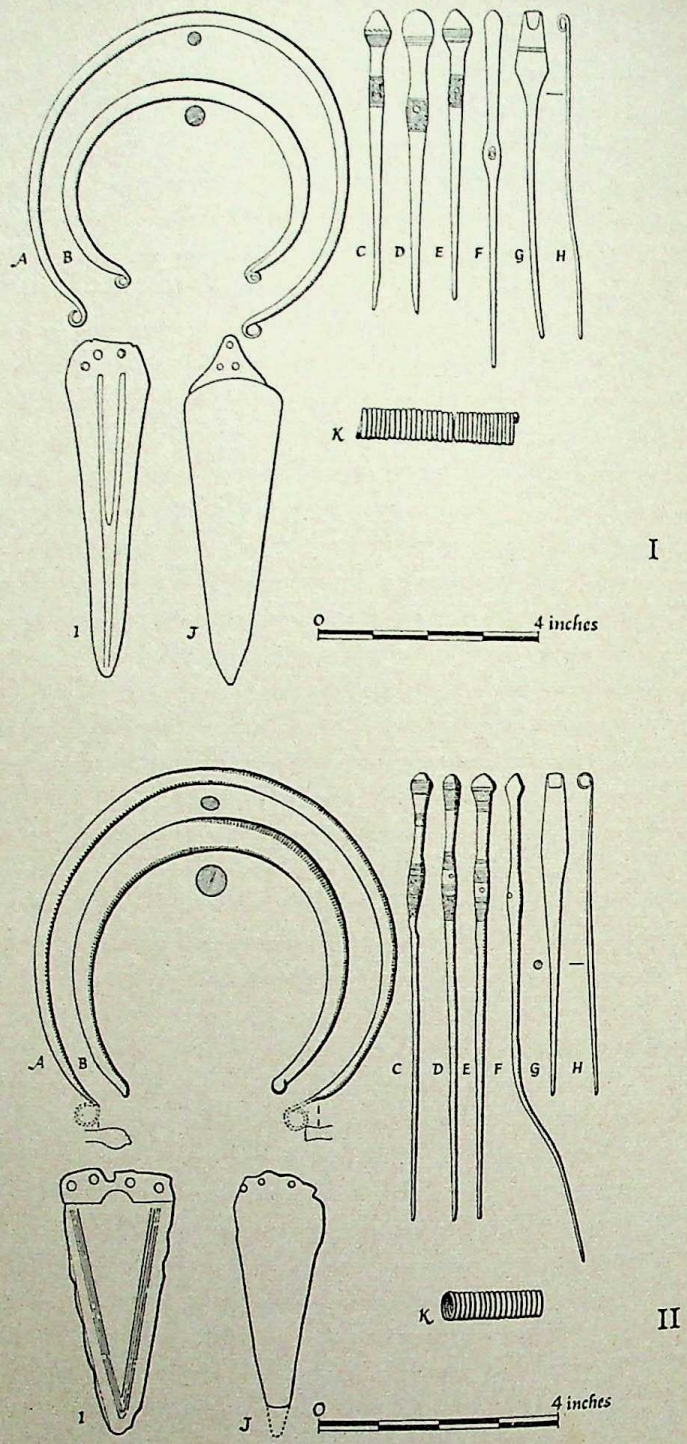


FIG. 86. Torques and weapons. I. Syria, II. Alsace. A and B: torques; C–H: pins; I and J: daggers; K: coiled rings (after Schaeffer).

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Syrian coast, there are found graves of a people who were there in about 2000 BC but were not necessarily natives of the place and very soon afterwards disappear and leave no trace of themselves. They are distinguished by wearing bronze torques, long pins with bulbous heads and pierced shafts, and curious rings, perhaps hair-rings, made of spirally twisted bronze wire, and they carry daggers with triangular blades and crescent-tipped handles, socketed lance-heads and eyeletted axe-blades; their presence at Ugarit coincides with a sudden and vigorous development of local bronze-working. Precisely the same people appear at the same time in Byblos, farther south, also working locally in bronze, as is proved by the finding of numerous votive jars full of unfinished castings of the same characteristic ornaments and weapons; it is quite possible that the offerings were made by metallurgists exploiting the deposits of stanniferous copper ore in the near-by mountains of Kesrouan. At Byblos, as at Ugarit, the evidence suggests that whoever these people were their stay in the place was transitory. Now exactly the same torques and pins, coiled rings and daggers are commonly found in Bohemia and Hungary; graves containing identical objects occur in Bavaria, Württemberg, Baden, Switzerland and Alsace (Fig. 86); the wandering gypsy-like smiths went everywhere, and everywhere they made and sold things of standard patterns even though they might combine that with more original work as a concession to local taste.

Towards the close of the second millennium BC local taste had prevailed and Europe of the Late Bronze Age was producing fine and individual work; but it still lagged far behind the Near East both in artistry and in technique; its promise was more important than its performance, and it needed the stimulus of the Iron Age for the north and west to make its full contribution to progress.

## CRAFTS AND INDUSTRIES

### *Mesopotamia*

Specialization in industry began very early and almost inevitably. Certain trades, as we have seen in the case of miners and metal-smelters, were in their nature whole-time jobs, leaving a man no leisure for anything else. There were others in which a man could expect to sell his products, i.e. to make a living by them, only if he acquired a greater skill than most people possessed, and to do that with the elementary tools available he was obliged to devote himself entirely to the one task. In both cases, especially in the latter, the skilled worker had to protect himself against undue competition; it must not be too easy for others to learn what he had learnt, to profit by his hardly won experience and by over-production to bring down the value of what he made; the number of craftsmen must be kept within reasonable limits and the secrets of the trade jealously guarded. The natural result of this jealousy was the organization of craft guilds.

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In Mesopotamia the craft guild was not a social organization independent of government control; it was recognized and utilized by the government. The guild-master, the 'Chief of the Joiners' or 'Chief of the Weavers', did indeed look after the guild's interest—he was, for instance, responsible for the recruiting of new members; but he also furnished the government with lists of the membership, he received orders from the government regarding the amount of the guild's produce that was required for the state's use, and arranged for the distribution of labour accordingly; and where the produce was liable to excise duty he had to see that the taxes were paid. The fact of the guild's having an official representative was obviously an advantage to both the guild and the government, and made their relations easier. Each trade occupied its own quarter of the city, as has ever been the custom in the Near East, and the practice of it descended from father to son, though outsiders, including slaves, might be admitted to apprenticeship; the term of apprenticeship for the weaver was five years, for the stone-mason four years, for the fuller two and a half years, while the baker could learn his profession in no more than fifteen months; during that period his master had to initiate the pupil in all the 'art and mystery' of the profession.

The phrase 'art and mystery' was indeed not lightly used. According to Sumerian tradition all the arts had been introduced by the divine creature Oannes 'since whose time no new inventions have been made'. Every craft was inspired by and under the protection of a god. This was most obviously true of the metallurgist whose work was a daily repeated miracle; with the help of the fire god he conjured the metal out of its ore, softened it and shaped it as he pleased; about all that he did there was something superhuman, and therefore he was a person to be feared and respected. In early days in Sumer he seems to have enjoyed a form of priesthood. Gudea of Lagash (*c.* 2200 BC) describes how 'he built the temple with precious metal; he caused the craftsmen in precious metal to dwell therein. He built the sanctuary with fine stone; he caused the stone-masons to dwell therein'—clearly these are professionals who were called in and had to be lodged on the site; but 'he built the temple with copper and lead; he brought the smiths, the priests of Nin-tu-kalam-ma, before her'; the smiths are more than professional craftsmen, they are priests, and their work requires the presence of the goddess their patron. This is perhaps an exceptional case, and certainly in later times smiths do not rank as priests; but in none of the crafts was the god very far away. Just as medicine was half magic, so in the instructions for performing what we should call a straightforward technical operation we find that some ritual act is interpolated, or some verbal charm has to be repeated, to ensure the success of an experiment whose result long experience has made familiar but which is none the less miraculous; the reason for its working is beyond man's understanding and depends upon the good will of the god.

The crafts were largely hereditary and the knowledge of them was confined

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to the initiate. That is why Uta-napishtim, the Sumerian Noah, takes with him into the ark all manner of handiworkers; their traditional skill must not be lost to the world. To divulge secrets divine in origin, except within the closed circle of the guild, would be impious, and clearly to the guild's detriment; the master was obliged under pain of a heavy fine to give full instruction to an authorized apprentice, but some of that instruction would be given, as surviving technological texts show, in a craft-jargon unintelligible to the outside world. The best illustration of this is given by a text in the British Museum (120960) which further proves the success with which a trade secret, and therefore a trade monopoly, could be preserved. One Liballit-Marduk of Babylon, in the seventeenth century BC, writes down for the benefit of his guild or his family a recipe for the glazing of earthenware—the glazing of frit and steatite had long been known but nobody had yet succeeded in making glaze adhere to pottery; he writes it in a cryptogram so elaborate that it might pass for a charm to allay the pangs of childbirth. The recipe was not published in clear until the beginning of the seventh century BC. For a thousand years the output was so small that archaeologists believed the invention must have been made about 800 BC; in that century a few examples were made for royal use and thereafter glazed ware becomes relatively common. The discovery at Alalakh of stray specimens dated to the fourteenth, sixteenth and seventeenth centuries proved that the old recipe had indeed been used and also that a monopoly in the process had endured for a millennium. The reality of guild discipline in Mesopotamia cannot be questioned.

Because secrets were so jealously guarded certain kinds of work could be done only by certain individuals, who therefore might move about, following the opportunities of business. Thus Gudea for his temple brought in skilled labour from Elam and Susa, just as Solomon for his temple in Jerusalem brought in Phoenician masons. When Amenhotep III of Egypt, and his son Akhenaton after him, wanted painted floors for their palaces these could not be supplied locally; Egyptian painting on tomb or temple walls had always been *tempera* painting *a secco*, water-colours on dry plaster, and such would never have stood up to the wear of feet on a pavement; what was needed was true fresco (Pl. 27), and for that the Pharaoh had to import decorators from Crete: in quite poor houses at Tell el Amarna there are found the Mycenaean vases which the Cretan workmen brought with them from home. Crete itself had learnt the art of fresco from Asia, and Asiatic architects helped to plan and build and Asiatic artists adorned the Palace of Minos; in the time of Ramses II the Great King of the Hittites for the same purpose persuaded a leading architect of Egypt, Parimakhu,[22] to come to Hattusas; good artists and skilled craftsmen were always in demand, and Nebuchadnezzar was following very ancient precedents when he carried off 'all the craftsmen and smiths' from Jerusalem. While the hereditary nature of the crafts made for conservatism, the son, or the apprentice, following

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the precepts of the older generation, the itinerant specialist on the other hand introduced new ideas and new processes (he would recruit local assistants who in time would learn his methods) and by internationalizing knowledge did much to advance the progress of the arts in general, even though that progress was in a uniform direction, ruled by historic precedent.

*Egypt*

In Egypt the craftsman was not his own master, nor did he normally enjoy the esteem accorded to his Mesopotamian *confrère*; that which raised the Egyptian above the common ruck was government office, and in comparison with the educated man, the civil servant, all who worked with their hands, builder or smith, stone-mason or baker, were as contemptible as they were unfortunate. There is virtually no literary evidence regarding the organization or the activities of so subordinate a class; the best source available is the sculpture in the great tombs of the Old and Middle Kingdom.

The craftsmen, like the agricultural labourers, were serfs; later there were slaves similarly engaged. The reliefs in the tombs of the landed nobility in the Old Kingdom and of the nomarchs in the Middle Kingdom show, side by side with scenes of agricultural life, the ploughing of the field and the droving of cattle, the hunting and the fishing, pictures of craftsmen of all sorts. Not only are there domestic scenes such as might be expected in a great house—the baking of bread and the preparation of food, the spinning of thread and the weaving of cloth, but we find too the goldsmiths and the copper-smiths, the potters and the boat-builders, the makers of stone vases, the carpenters and the wood-carvers. The estates of the Egyptian noblemen were self-supporting and everything that they required was made at home; they lived in luxury, they built houses, they loved fine raiment and costly jewellery, and their establishments therefore included skilled craftsmen of every sort. There must have been, of course, workers plying similar trades in the towns, but they would be of small account. In ancient Egypt the gulf between the rich and the poor was immense, and the poor had simple needs and very little with which to satisfy them; the fine stuffs and the beautiful gold work made by the nobleman's retainers would find no purchasers in the town bazaar, and the independent craftsman would be one with no more skill than sufficed for making the crude products, tools or trinkets, that the peasant wanted and could afford. All good work was done in the houses and to the orders of the wealthy patrons.

Under the New Kingdom, when the feudal nobles had been eliminated and the great estates had reverted to the Pharaoh, it was he who employed all the best of the craftsmen. The Pharaohs of the Eighteenth Dynasty were indefatigable builders, directly or through the Amon priesthood, and now a whole imperial court had to be maintained in befitting splendour, the courtiers had to be rewarded with splendid robes and collars of worked gold, a standing army had to be equipped, and a whole reign was not too

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long for the preparing of the treasures which should accompany Pharaoh's body to his tomb. No skilled man would lack employment in those days. When Akhenaton was feverishly building his new capital there were not enough experienced carvers to cut the inscriptions that covered the walls of his temples, and mere journeymen had to be supplied with plaster of Paris casts of the texts which they had mechanically to reproduce.

Though nothing could alter the fact that the craftsmen, like all other workers, were serfs, not freemen, yet the direct service of Pharaoh did give opportunities for advancement. In the royal workshops, regularly inspected by the vizier, exceptional skill was likely to be noticed and rewarded, and the personal interest of the ruler in his grandiose constructions would signal out for his favour any individual whose genius served to build or adorn them. The earliest architect known to us by name is Imhotep, who worked for Zoser of the Third Dynasty and became a legend in Egypt. Under the New Empire we have Senmut, renowned as the architect of the beautiful Deir el Bahri temple (though this is in fact a plagiarism, an adaptation of the Eleventh Dynasty temple of Mentuhotep on a neighbouring site) and one of the most influential officers of Queen Hatshepsut's court; we have Ineni and Thutiy, workers in metal to the same queen, Amenhotep son of Hapu, Amenhotep III's architect who introduced the peripteral cella-temple, Bek, sculptor to Akhenaton, and others. Always, under an autocratic monarchy, an individual here and there may by his special gifts rise to fame and power; that happened with craftsmen in Egypt[23] and it did not happen, so far as we know, in Mesopotamia; but in all other respects the Asiatic was the better off. In Egypt the trades were hereditary, by law as well as by custom, but because the workers were not free no guilds could really protect them; tied to the service of Pharaoh, they could not travel in search of a fresh clientèle; fed and clothed and housed by him, they could not better themselves socially or economically; as the field labourer was *adscriptus glebae*, so the artisan was chained to his bench, to all intents and purposes a slave.

'The Urban Revolution', writes Dr R. J. Forbes,[24] 'brought in the basic crafts of modern technology. The later classical world had very little to add to these early achievements.' It is indeed true that an amazing advance was made in the course of the Bronze Age. It is not within the scope of this book to attempt a history of technology as such, but the technical exploits of early man must be noted and the level of his achievement put on record.

*Pottery*

The first really mechanical device, ushering in a new age, was the potter's wheel. It first appears in Mesopotamia, introduced into that country by the northerners who in the second half of the fourth millennium BC started what archaeologists know as the Uruk period.[25] The painted wares of the al'Ubaid period had all been hand-made; the monochrome Uruk pottery is turned on the wheel, and in the lowest level representing their culture

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an actual specimen of the potter's wheel has been found, a pivoted disk of baked clay about 3 feet in diameter and 5 inches thick, heavy enough to revolve of its own momentum after being swung by means of a wooden handle set close to its rim. From that time onwards all Mesopotamian pottery is wheel-made. In Egypt the wheel did not come into use until much later, and even in the Fifth Dynasty tomb reliefs show the potter still employing the 'slow' wheel, which is turned by hand and revolves only at the hand's speed: in the Middle Kingdom the true wheel had been generally adopted. Machinery enabled the craftsman to produce vessels with a wider range of shape, and far more quickly; but it did not help towards artistic improvement, and since as wealth increased vessels of stone and of metal replaced those of earthenware in the houses of such as could afford them, the potter had less inducement to make things of beauty, and the quality of his pots tended to deteriorate. Both in Egypt and in Mesopotamia pottery, though skilfully made, is for the most part strictly utilitarian and of small artistic merit, comparing very unfavourably with the wares of the Chalcolithic period. The same cannot quite be said of the Indus valley. The Harappā pottery, all of it wheel-made, is for the most part plain, mass-produced and purely utilitarian, but side by side with such we find elaborately painted vessels, usually in red and black but sometimes polychrome, whose decoration may have been ultimately derived from the earlier Kulli ware but in the developed form in which it occurs at Harappā and Mohenjo-daro is peculiar to the Indus valley culture. The designs on these pots are admirable and the actual painting is done with much skill and accuracy; the pains taken show that the makers were consulting the tastes of fastidious clients prepared to pay high prices for luxury goods. In the case of anything like pottery it is demand that creates supply, and only an appreciative public will induce the potter to make vessels of artistic quality; in Egypt and in Babylonia that appreciation was lacking, and the pottery in consequence is poor; on the other hand Crete, where social conditions were different, produced the finest wares of the ancient world.

Shortly before 2000 BC the potter's wheel was introduced into Crete, presumably from north Syria or from Asia Minor, and the potters of the succeeding age—the Middle Minoan period—made use of the machine not for crude mass-production but for the refinement of their traditional wares. It is remarkable that very many of their shapes are borrowed from metal vessels, which shows that the richer Cretans were accustomed to using tableware of gold, silver or bronze, and from the later examples known to us either by survival or from the pictures in Egyptian tombs we might suppose that such treasures would inevitably drive earthenware off the market. But the Cretan potter was prepared to meet the competition of the goldsmith. He learnt how to make an egg-shell-thin pottery, lighter to the hand than anything in metal, and as against the uniform glitter of the silver cup he painted his clay with gay polychrome designs which could not fail to appeal

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to so colour-loving a people as that of Crete; alike on the little tumblers and on the great store-jars of the 'Palace period' there are decorative patterns or stylized naturalistic scenes painted by craftsmen who had a real sense of artistry (Pl. 24). Since the painted pottery is found freely in the palace itself, where if anywhere vases of precious metal would have been used, it is clear that the former was in high repute. It was made for home consumption, but exported specimens have been found at Abydos and at Kahun in Egypt and at Ugarit on the Syrian coast; a hundred and fifty years after the 'Palace style' had ceased to be made a north Syrian potter must have seen an imported example of this delicate ware, preserved perhaps in a temple treasury, and reproduced the old Minoan design upon his own 'Atchana' vases.

Down to the end of the second millennium BC the European potter produced nothing worthy of note. The conditions of life throughout the continent were not such as to encourage or even allow the making of fine earthenware. The wheel remained unknown. The older painted wares of the Tripolye and Dimini schools had died out. The unpainted pottery of Bohemia and Hungary, spreading gradually westwards, that of the Apennine and Terramara cultures of Italy, the beakers and the food-vessels of western Europe and the British Isles, are invaluable for the evidence which they give concerning the movements of peoples and the dissemination of cultures; but they do little to illustrate the development of the potter's art in human history, they embody no original inventions affecting technique and can claim very slight aesthetic value.[26] On the other hand, the little that is known about Chinese pottery of the Shang period gives to it a real importance. Some of it is hand-made, some turned on the wheel, so that probably the wheel had only recently been introduced; it is kiln-fired, but the kilns seem to have been of a rudimentary type since the heat was evidently ill-regulated. Most of the vases were of a grey clay firing to red and many of them have simple impressed or incised decoration. A minority are of white China clay (kaolin) supposed to have been brought from an area some 17 miles north of Anyang, Tz'ŭ Chou, which under the Sung Dynasty was a famous centre of the porcelain industry; these white vases, decorated with designs carved in the wet clay, were made for ceremonial purposes, and fine examples of them are buried in the Shang royal tombs. A certain number of pots, made of a brownish clay and decorated with wavy parallel lines, have part of their surface covered with a grey glaze. The first point of interest regards the shapes of the vessels. H. G. Creel[27] states, 'Almost every form that we find in Shang and later Chinese bronze ceremonial vessels is found in the Shang pottery'. It is therefore to the credit of these early craftsmen that they standardized the types of ceremonial vases which were to persist throughout Chinese history; granted that some were not invented by them but inherited from the Neolithic past, none the less their contribution to Chinese art was a memorable one. The second point is that by the use of kaolin clay and by

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the application of glaze they seem to have laid the foundations of all the ceramic art of after times.

*Glass*

From a very early date the Egyptian potter had, as a side-line to his ordinary business, practised the making of vessels in glazed frit. Glaze had been known at the beginning of the Dynastic Age and was applied to small objects cut out of steatite or moulded in frit (or siliceous paste) and soon vases were made in the same way; the technique spread quickly, and beads of glazed frit occur fairly freely in Sumer in the Early Dynastic period. The glaze was, of course, glass, and about a dozen objects (nearly all small beads) made of real glass can be assigned to relatively early times—in Egypt to the Eleventh and Twelfth Dynasties and in Mesopotamia to about 2100 BC —and on the whole it seems that Mesopotamia may here have been the first in the field, especially as an example of glass from Eridu is a fair-sized lump, unshaped, a piece of the manufacturer's raw material.[28] But shortly before 1600 BC the discovery was made that slender rods of coloured glass, half-melted, could be twisted round a core into the form of a bottle, then re-heated so that the rods should coalesce, and then polished; during the second stage the soft surface could be 'combed' so as to produce waves in the rods, thus variegating the pattern at the craftsman's pleasure; the result was a little polychrome vase, lustrous and semi-translucent, unlike anything else known and certain to command a high price. The earliest examples of such come from Syria, to which country the invention may be credited, but by the beginning of the Eighteenth Dynasty the Egyptians had taken it over and were making vases finer in quality than the Syrians had ever made (Pl. 23, c). The same technique was used for manufacturing beads, large balls with polychrome inlay in the form of 'eyes' or rosettes; these gaily attractive ornaments, easily portable and not too fragile, were ideal objects of trade with the peoples of less civilized or of barbarous lands, and they were exported widely, westwards to Italy and across the European continent, to come to light again in graves in Britain, while the eastern trade took them to China and to Indonesia—'eye-beads' from Loyang (the Chou capital) are proved by spectrographic analysis to be identical with others from Qau in Egypt. The Chinese imitated such imported beads with great success—so much so that the polychrome beads made in south China are only to be distinguished from the foreign examples by their marked barium content, whereas the Egyptian and Syrian glass contains no trace of barium, and also by the presence of lead, which in the west is not found in glass until shortly before the Christian era. The facts seem to show that lead glass—'flint glass' as it is often called—was a Chinese invention; it is an invention that has had far-reaching results in glass manufacture, but it was due to experiments prompted by the beads of silica-soda-lime glass coming from the Middle East.

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*Stone Vases*

It has already been said that the potter's craft was liable to suffer through the competition of stone vases.[29] Throughout the Middle East and as far away as Mehi (in what is now Baluchistan) stone vessels of all sorts were regularly manufactured (Pl. 20, b), and sometimes in great quantities, and in China the fact of the earliest porcelain being admittedly an imitation of jade suggests that the same was true in that country also.

In Egypt it was in the later pre-Dynastic and Early Dynastic periods that the art of making stone vases reached its zenith; the craftsmen used not only the softer stones such as steatite and alabaster (aragonite) but also the more refractory types, breccia, syenite, diorite, porphyry and obsidian, fashioning out of these materials huge bowls, as much as 2 feet in diameter, with a dignity of form and a precision of workmanship that are truly admirable. It was the export of such early Egyptian vessels to Knossos that roused the Cretan craftsmen to competition, and by the end of the Early Minoan period they were making exquisite little vases in stones of many colours; since such are found not only on the Palace site but, as at Mochlos, in the graves of ordinary citizens, we may conclude that they were in general demand and that the output was on a considerable scale.

In Mesopotamia too the craft was at its best in early times. In the Uruk period and afterwards in the period of Jamdat Nasr, i.e. in the second half of the fourth millennium BC and therefore rather before the vogue started in Egypt, the stone-cutters were making the most elaborate vases, sometimes covered with designs carved in relief, sometimes inlaid with varicoloured stone, sometimes composite, made of two or more stones of different colours joined together. In the Jamdat Nasr period stone vases had become so common that in the graves they often outnumber those of clay. Most are plain bowls of white limestone of a purely utilitarian type, but for larger vessels other materials are used and there the artistic sensibility of the makers is evident, the strong and severe outlines of a diorite vase contrasting with the delicate cutting of one in alabaster, worked down to an almost paper thinness so as to do justice to the translucent quality of the stone. In the Early Dynastic period which followed, the popularity of the stone vase as such is clearly on the wane; simple little limestone bowls are still fairly common and a vessel of translucent green calcite or of lapis lazuli would obviously be prized for its rarity, but elaborately carved vases or those of materials such as diorite seem from this time onwards to have been intended for dedication in temples rather than for ordinary use. So too in Egypt, the great hard-stone vessels went out of fashion and, during and after the Middle Kingdom, stone vases, common though they are, are nearly always small in size and in material limited to alabaster and steatite; they were 'toilet vases', intended to contain scented oils and unguents such as could not be kept in porous clay pots, or the eye-paint kohl, which had to be protected against damp. Utilitarian in purpose they certainly were, but



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the traditional shapes which had been dictated by that purpose (they would be termed 'functional' today) were excellent and deserved to be perpetuated; it is only when we see the technically fine but artistically monstrous alabasters from the tomb of Tutankhamen that the utter degeneration of the stone-cutter's craft in Egypt becomes manifest.[30]

Because Egypt is a land rich in stone of all sorts the stone-vase industry there was a natural growth; but its development in Mesopotamia is remarkable, seeing that no fit stone is to be found in the Euphrates valley and all the material had to be imported. That there was a trade in finished goods is certain, for decorated soft-stone pots of the Kulli culture are found on Mesopotamian sites in the Jamdat Nasr and Early Dynastic periods, imported

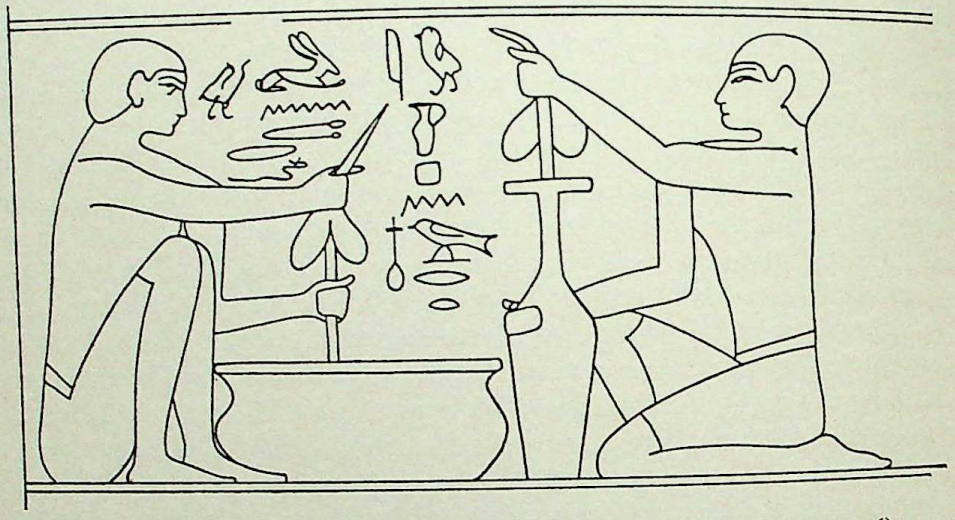

FIG. 87. Egyptian workmen drilling out stone vases (after Breasted).

from southern Baluchistan, but these are comparatively rare; the vast bulk of the vases were fashioned on the spot from imported material. The Egyptian stone vases were hollowed out by means of tubular drills either worked by a bow or, in the case of larger pots, weighted and turned by hand, a technique illustrated by tomb reliefs (Fig. 87). The same process was employed in Mesopotamia, but side by side with it there was used an alternative technique which seems to have been a local invention; on sites of Jamdat Nasr date there are found drill-heads of hard stone, rather less than half a sphere, with slots at the sides to take the pincer-ends of the drill shaft, which exactly fit the standard-size diorite bowls found on the same sites; there can therefore be no doubt as to the existence of a local industry. It is curious that whereas the shapes of the early Mesopotamian stone vases are original, showing no relation to those of Egypt, yet in the Early Dynastic period the commonest shapes of 'alabaster' vessels are identical with those from the Nile valley and would pass for imports but for the fact that they are made

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not from Egyptian aragonite but from the stalagmitic calcite found in the southern part of the Persian Gulf. Either the Sumerians obtained by trade Egyptian vases which they so admired that they proceeded to look for and to import a stone that would allow of their imitation—which seems hardly likely—or the vases were made by people of the Gulf who had ready access to the stone and traded their products to Mesopotamia and possibly to Egypt also, in both cases setting an example for imitation.

The importation of foreign stone for vase-making is well illustrated in the case of obsidian. The material was particularly esteemed for its beauty and perhaps also because of the difficulty of working it. The principal sources were Melos, which supplied a grey stone, and eastern Anatolia, which furnished a dark grey and a black variety. The Egyptians used the black variety, making small, rather heavy pots which depended for their charm on the polished glass-like surface; in Mesopotamia both the black and the light grey types were employed and the stone (especially the light-coloured stone) was ground down to the thinness of blown glass, thus taking full advantage of its translucence, a process which must have involved an immense cost in time and labour. Attached to a royal building of the eighteenth century BC at Alalakh there was found a vase-maker's shop containing the raw material, obsidian imported from eastern Anatolia. It came in the form of rectangular blocks measuring *c.* 12 by 8 by 8 inches (0·30 by 0·20 by 0·20 metres)—some may have been larger—which were very carefully squared and ground, an unnecessary refinement, seeing that they were intended for cutting up, but perhaps an excuse for raising the price. The vases were shaped by chipping, the old flint-knapper's technique, the interiors were bored out with tubular drills, and the rough surface was then ground down and finally polished with haematite as an abrasive. When then at Alalakh we find alabaster vases identical in shape with those from Egypt and from Mesopotamia already mentioned, it does not necessarily mean that we have to do with objects imported ready-made from the one country or the other; it is equally probable that such are the work of local craftsmen using imported raw material and copying foreign models which experience had proved to be popular; already by the eighteenth century BC international contacts had gone far towards uniting the countries of the Middle East in an artistic commonwealth.

*Ivory*

More tangible evidence of the sharing of artistic styles is afforded by the ivory trade. From pre-Dynastic times this exquisite material had been a favourite with the Egyptians and always it was one of the luxury goods in greatest demand. Ivory was carved into statuettes such as the portrait figure of Khufu, Pharaoh of the Fourth Dynasty, or that on Tutankhamen's head-rest, into spoons and toilet-boxes, fan and mirror handles, amulets and gaming pieces in the form of lions or jackals, and it was used for the decoration of furniture, whether as simple bands and checker patterns or carved and

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enriched with paint or with gold and coloured stones and faience as we see it in caskets and thrones from Tutankhamen's tomb. The raw material came from the south, of course; ivory from central Africa was brought up overland to Libya and so to Egypt, and it was also one of the staples of the Sudan trade; thus in the Sixth Dynasty Sebni, governor of Elephantine, returning from an expedition to the Sudan, sends on in advance a large ivory tusk as evidence for Pharaoh of his success and boasts that he has one of five feet. In the Eighteenth Dynasty Queen Hatshepsut boasts that she has obtained seven hundred tusks from Libya. The main source of ivory supply was accessible to Egypt alone;[31] the rival civilization of Sumer used for similar purposes the big conch-shells of the Persian Gulf, an admirable substitute so far as small objects were concerned but very limited as regards size—the largest shell plaque found in the royal cemetery at Ur measures only two-and-a-half inches either way (0·06 metre square). It might have been expected, therefore, that the Egyptian craftsmen, skilled as they were, would have kept a monopoly of the material; but in the latter part of our period (and yet more so in the first millennium) it was the ivory workers of the Phoenician coast towns whose reputation stood highest and whose goods travelled far along the trade routes of the Middle East. The Phoenicians had little artistic imagination and for that reason, or because their market was better suited so, the designs of their ivories are generally copied from Egyptian originals; it would appear that they were under-cutting the Egyptian industry by unfair imitation. This might have been the case had the Egyptians been freemen; as it was, they were Pharaoh's serfs and presumably the whole of their output was not more than sufficed for the requirements of the court; Pharaoh was not interested in retail trade with foreign parts and any surplus raw material would be sold readily enough to foreign factories. The Phoenicians then were licensed to receive ivory, and their imitations were what their clients wanted.

The ivories of Alalakh carry the matter farther (Pl. 28). Apart from the Sudan the only source of ivory in the Middle East was Niya, a tract of scrub jungle on the middle Euphrates, where there were still herds of elephants more or less artificially preserved by the Syrians and enthusiastically hunted by such Egyptian Pharaohs as pushed their conquests so far north—Thutmose III claims to have hunted 120. The more powerful of the Alalakh kings extended their dominions to include the elephant reserve and thereby secured the monopoly of the local ivory; actual tusks were found in the magazines of the palace of Yarim-Lim. Some of the ivory may have been sold as raw material to Syrians or Phoenicians (no evidence is forthcoming on the point), but certainly much of it was worked by local craftsmen, and the examples found show a remarkable variety of styles. Toilet-boxes in the form of ducks or adorned with the head of the goddess Hathor are indistinguishable from their Egyptian prototypes, but there is no reason for thinking that they are imports from Egypt; some reproduce faithfully a design found at Carchemish, presumably Hittite; one would on stylistic

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grounds pass as Hurrite, several have Cretan designs and might well have come from Knossos; yet all alike were made in this one centre in north Syria. The fact is that the interchange of ideas had gone so far that a skilled craftsman was sufficiently familiar with the arts of his neighbours to be able to manufacture for each market the type of goods that would appeal to the people there; admittedly the Syrian might be attracted by a Cretan-style object, but he would in that case want something that looked genuinely Cretan, and the ivory-worker therefore had to be well versed in the characteristics of each school of art. At Ugarit there has been found a magnificent ivory, a relief of the goddess who is 'Our Lady of Beasts' (Pl. 29); it is Cretan in conception, but there is no means of deciding where it was actually made. The countries of the Middle East had their different art traditions, clearly defined, but the skilled craftsman of the fifteenth century working for export was apt to disregard frontiers.

*Carpentry*

Only in the dry climate of Egypt, in its hermetically sealed rock-cut tombs, does woodwork have a chance to survive the centuries; elsewhere it has almost perished; for actual specimens of the woodworker's craft we must therefore look to Egypt, and from the similarity of tools and from illustrations in other media assume that technique and fashions in other lands followed on much the same lines.

The Egyptian carpenter was handicapped by the lack of good native timber; the Nile valley supplied sycamore, fig, tamarisk, willow and acacia, but none of these is satisfactory material; most of his wood had to be imported, and from Africa and from the Lebanon he obtained cedar and cypress, ebony, juniper, fir, yew and oak. The small size of the native trees and the cost of imported timber were a challenge to the carpenter's ingenuity, and from a very early date he developed a remarkable skill in joinery;[32] as early as the Third Dynasty he was making coffins with halved, mitred and concealed mitre joints; a royal barge of the Twelfth Dynasty is built entirely of small pieces of wood set longitudinally in a sort of patchwork; he had learnt the use of thin veneers and could even make plywood—a six-ply of different sorts of timber. He had practically every tool used by the modern carpenter (except for the plane and the spoke-shave), and set squares and levels to control his work; many of these can be seen in use in a model of a workshop (Pl. 30) found in an Eleventh Dynasty tomb at Deir el Bahri showing a gang of carpenters at work together.

Partly because of the scarcity of wood having a pleasing grain, more, perhaps, because of Oriental taste, the Egyptian furniture-maker was apt to regard his woodwork as a frame or a background rather than something that could stand on its own merits; thus in the tomb of Tutankhamen there is wooden furniture in plenty, but in almost every piece the wood itself scarcely shows; it is painted, or it is masked with inlay, or it is entirely covered with

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gesso and gold foil. All-gilt chairs and beds would naturally not be found in every house—even in the royal tomb of Yuya some of the woodwork of the bed is exposed—but painted and inlaid furniture must have been very common. It has to be remembered that the Egyptian house was sparsely furnished; there were beds, tables, chairs, stools and chests or caskets, but very little else, so that the scope of the cabinet-maker was strictly limited. On the other hand, the well-to-do client would want to make the best effect possible with the few things that he required, and would prefer something coloured. Ruling out of consideration here the magnificent wooden reliefs and statues (such as the Old Kingdom panel of Hesire (Pl. 31, a)—but even this was originally painted—or the statue called 'the Sheikh el Beled'), because those were made by artists, not by craftsmen, we may say that the Egyptian wood-worker, for all his manual skill, depended largely for the fine finish of his work on men of a different trade, on the ivory-carver, the goldsmith and the painter.

The same fashions must have prevailed over most of the Middle East. In Mesopotamia and in Syria the same carpenter's tools were in use, and there is no reason to suppose that the carpenters were less skilled than those of Egypt. The Syrians had much better wood ready to their hand and the Mesopotamians could easily get oak and walnut from the northern lands of the Upper Tigris, and they may therefore have been less inclined to mask their handiwork; certainly for the Early Dynastic period the royal cemetery at Ur gives us one example of wood inlaid with wood of a different sort and one of a wooden panel carved in relief and not disguised by any overcoat; Queen Shub-ad's big chest had only a single band of mosaic inlay, but whether the rest of the wood was exposed or was painted it was impossible to say. But already inlay was freely employed to embellish furniture, as in the case of the queen's sledge chariot, and, as with the gaming-board, the entire surface might be covered with encrustation in shell and coloured stone. In the fourteenth-century palace at Alalakh a mass of little squares and triangles and slips of ivory and narrow gold beading showed that the furniture had been encrusted very much in the fashion of the Damascus tables of today, and we can be sure that the 'ivory' bed of Hazael, king of Syria, found at Arslan Tash, represents a very ancient tradition. In China, in the Shang period, the walls of the wooden chambers of the Anyang tombs are sometimes painted (or enamelled) but sometimes very finely carved in relief; in some cases the wood is inlaid with carved pieces of boar's-tusk ivory. What is true of the tombs was presumably true of the houses of the living also; but though we know that wood entered largely into their construction nothing remains to show its character; all that can be said, in the dearth of further evidence, is that art of the later Chinese woodworkers seems to have its roots in the craftsmanship of Shang.

*Textiles*

As with woodwork so in the case of textiles Egypt is the only country in

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which so perishable a material has survived in quantities sufficient to illustrate the history of manufacture and the precise nature of the goods manufactured. It is from that point of view unfortunate that throughout the Bronze Age the range of Egyptian weaving was peculiarly limited. There is evidence enough to show that elsewhere techniques were employed and effects produced which were not parallelled in the Nile valley; long before the Bronze Age ended the weaver's art was fully developed and, in one country or another, centres of production were supplying their own or neighbouring peoples with fabrics of the most varied sorts.

Any attempt to trace these varieties to a single source would be misguided. Such a thing as the method of smelting copper, an operation difficult in itself and requiring a combination of circumstances which cannot occur often, is not likely to have been invented independently by different people, and we are justified in looking for a single place of origin. But weaving is essentially a simple and natural process. The interlacing of rushes or of grass is a child's amusement, and the savage employs it for his primitive needs; the advantage of using a finer fibre is obvious and the spinning of such, or of the wool and hairs of animals, was the common property of man in the Stone Age. And so simple is the actual weaving that it requires no machinery whatsoever. At the present day a village woman of north Syria with a few hanks of coloured wool and one stick driven into the ground will make an elaborate belt for a young man to wear; the belt, with its set pattern of design, its open-work and its tassels, is identical with those worn by the Hittite captains on a stone relief from Carchemish of the eighth century BC which must have been made in the same way; with a modern loom the rate of production would of course be speeded up indefinitely, but the machinery for the setting-up would be really intricate.

The development of the loom from the primitive business of hand-weaving was largely due to the desire to save labour. A number of warp pegs driven into the ground would take the place of the single stick carrying all the warps; then the warps are tied to a warp beam which itself may be secured by pegs; and each step forward prompted a further step. At a very early date we find in use the mat-loom, with which the process is really that of mat-making, the horizontal ground-loom, the vertical two-beamed loom and the warp-weighted loom, as well as small hand-frames; their dispersion shows clearly enough that these were not evolved one out of another but were invented independently. The horizontal loom is most characteristic of Egypt, the vertical two-beamed loom of the Levant and the warp-weighted loom of Europe; but by the time of the Eighteenth Dynasty at least Egypt was using both vertical and horizontal looms and Syria and Mesopotamia were doing the same. Ideas were exchanged and models were imitated, but that is not necessarily the explanation of the facts. The Syrian used both types of vertical loom, and it cannot be supposed that he borrowed the warp-weighted type from Europe; somebody in the east invented it, and it continued in use

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because for making certain sorts of cloth it had the advantage over the beamed loom of allowing more play to the warp threads. Europe did not borrow the warp-weighted loom from the Levant since, in the first place, all the evidence is in favour of its having been indigenous and, in the second, when closer association with the Levant introduced to them the two-beamed loom the European weavers quickly changed over from the one type to the other. India and China were equally independent in their invention.

In all these looms the weaving was at first done with the fingers. Later on the shed-rod was brought in to separate the alternate warp threads, then the rod-heddle to lift the alternate threads while the shed-rod gives passage to the weft, then the comb for pressing the weft tightly, then, for more complicated work, the heddles were multiplied; these were labour-saving devices which were of the greatest benefit to the weaver, but they were only new methods of producing what had already been produced without them; thus the draw-loom harness, used very early in China, was not introduced into Egypt until late in the first millennium BC, but long before that small all-over diaper patterns had been laboriously worked by hand.

To some extent the character of the loom was influenced by the nature of the thread used, which differed in different countries, and again local taste or prejudice decided the class of goods in local demand and therefore of the machinery used for their production.

Egypt was pre-eminently a flax-growing country, so would naturally make linen cloth;[33] the Egyptians also had a ritualistic prejudice against wool, as something essentially unclean, and although a little wool was woven for rugs, etc., that was a very minor industry. Linen is difficult to dye, and although a few experiments in this direction were made in early times (an example with blue warp stripes was found in the pyramid of Unas, Fifth Dynasty) they were soon abandoned; for personal wear the Egyptian preferred white, and the weavers accordingly concentrated their efforts on the production of white goods. In early times, naturally, it was the plain weave that they used, and this was indeed standardized until about 2500 BC; but after that date they manufactured a very wide range of linen cloth.

Linen fibre is very fine and very strong; when spun it makes a thread which is not only tough but also smooth, so that on a cloth loom the warp threads can be set up so closely as to touch each other and yet suffer no damage by friction when the weft is beaten in among them; when the warp is so closely set the number of wefts has to be reduced, the traditional Egyptian ratio being two or three wefts to four warps. In such 'plain' weaving it is the warp that bends to enclose the weft, and the latter remains relatively straight. Weaving of this sort is best done on a horizontal loom, with the warp not too tightly stretched, and with each shot the weft is taken across the entire width of the fabric. By varying the size and quality of the yarn an extraordinary variety of cloth can be made with what is really the same weave. Egypt became famous for the fineness of its tissues, the weavers making the stuff for those

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diaphanous garments which are so often represented in Egyptian paintings and reliefs; a striped effect was obtained by using a thick soft warp with an almost invisible weft, a spotted effect by 'snarls' in over-spun yarn on a muslin-like ground; from 2100 BC onwards the looped technique worked with rods was introduced, sometimes with an all-over effect like a Turkish towel, sometimes dispersedly, in uniformly spaced spots, and selvage fringes were produced in the same way. Down to the Eighteenth Dynasty white linen materials made on the principle of the plain weave in its many varieties formed the entire output of the Egyptian weavers, and so long as that was the case the horizontal loom met all their requirements. In the Eighteenth Dynasty the vertical loom also came into use.

*Wool and the Vertical Loom*

In Syria and in Mesopotamia flax was grown relatively little and the natural material for the making of cloth was wool.

The wool fibre is fairly long and well adapted to spinning, but its surface is scaly, instead of being smooth as is that of the flax fibre, and instead of being straight it is crimped; the spun thread is loose in texture, is apt to stretch and is rough to the degree that threads in close contact catch on each other; consequently in weaving the warp threads have to be widely spaced, and, to prevent sagging, have to be kept under constant tension. Since tense warps could not bend round the weft, as in linen weaving, the weft had to be slack enough to bend round the warp; because the warps were spaced, more weft threads could be used, and the weft had to be beaten tightly together, so much so that the warp did not show at all; this is the tapestry weave in its simplest form. For these technical reasons Syria and Mesopotamia preferred the vertical loom; it secured the warp tension more effectively and it facilitated the beating of the weft.

With the vertical loom (on which the alternate warp threads are pulled forward instead of being lifted) the shuttle does not easily pass between the warps, and if a single shot of weft were run through from selvage to selvage the slack necessary for its bending round the warp would not be evenly distributed; therefore only a few warps are opened at a time, and the resulting small section of weft is beaten in before the run is completed, and the weft can be turned back in the course of the row, so that adjacent patches can be worked in different colours. Wool takes colours more readily than does any other material, and from the outset the peoples of Syria showed their preference for gay clothing. In Egyptian wall-paintings Asiatics are always distinguished by their decorated garments, the 'cloak of many colours' woven for the young Joseph; such may be simple stripes, like the 'Seven Kings' of the modern Aleppo looms, or patterned goods for the making of which the tapestry loom was indispensable. Seeing that no actual fabrics are preserved it is mainly upon the Egyptian paintings that we must rely for information regarding the types of stuff manufactured in Syria, but literary sources leave



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no doubt as to the renown gained by the Syrian weavers throughout the Near East. Not only cloth for garments was produced; curtains, i.e. *killims* woven in the Gobelins technique and bearing patterns some of which survive to the present day, were in great demand, and the carved marble thresholds and floors of later Assyrian palaces merely reproduce the hand-woven carpets which for many centuries past must have been made in the factories and by the tent-dwellers of Mesopotamia and Iran (Pl. 26). In the late Middle Kingdom and in the Eighteenth Dynasty Syrian weavers were brought into Egypt, and from the time of Thutmose IV (1405 BC) the tombs in the Valley of the Kings furnish us with a series of splendid pattern-weavers in which the design is Egyptian but the technique Asiatic, while the material is still the linen traditional in Egypt. Presumably the Egyptian prejudice against wool still held good, but the use of linen in its stead, though it enforced a more limited range of colours, did have the advantage that its finer threads made possible a design more intricate than could have been produced in wool; thus the girdle of Ramses III (*c.* 1170 BC) gives a surface count of 173 by 77 threads to the square inch, and to get the pattern four or five threads are required for every one shown on the face. The very elaborate bands with figure subjects which adorn the dresses of kings and courtiers on Assyrian bas-reliefs would have been of Asiatic make, whether in wool or linen, and like the similar bands on one of the tunics from Tutankhamen's tomb may have been of embroidery worked by hand on a frame, but could have been made on a tapestry loom, though anything up to ten heddles would have been needed. The fact is that by the end of the second millennium BC the Middle East was producing both in plain weave and in tapestry most known types of fabric and those of a quality not easily surpassed.

For early Indian textiles we have virtually no material and absolutely no literary evidence. At Mohenjo-daro a few minute specimens of cloth have been found adhering to metal, enough to prove that the thread is of cotton, as indeed was to be expected, since cotton is indigenous to India. One example rather larger than the rest showed three weft threads to each warp thread, from which it would appear that the fabric was tapestry-woven on a vertical loom, but no more than that can be said. In the classical period India was exporting cloth and yarn made of wild silk (*Tusseh*) to the Middle East, and examples of it have been found at Palmyra, but for its manufacture at an early date there is no evidence. Real silk got from *Bombyx mori* was a Chinese monopoly until well on in the present era. Its early history remains unknown, the oldest actual examples found being tiny fragments preserved on bronzes of the Yin period, *c.* 1000 BC, which show patterns of twill damask; but Chinese technique was, at the time when comparisons first become possible, more highly developed than that of the western world; in the Han period the looms themselves were better and the satin and damask weavers were definitely superior. The silk thread, long, fine and smooth and as readily dyed as wool, offered a challenge to Chinese ingenuity; and the people whose craftsmen, in

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the Shang period, could produce by the *cire perdue* process the finest bronzes ever made in China, are likely to have responded successfully to the challenge.

In the art of weaving no other countries of the Old World could compete with those whose industry has been described above. In central Asia and in the Russian steppes the nomad breeders of sheep and goats used the wool—particularly the sheep's wool—for making felt, as they have made it up to the present day, and did not spin it into thread for the manufacture of cloth. In so far as they were brought into contact with their more civilized neighbours they did in time pick up some knowledge of textiles, but for the most part they were content to import ready-made goods; the craft of carpet-knotting they did take over, for the machinery required for that is of the simplest, and carpets are useful as tent furniture; but weaving proper was introduced late and was never highly developed.

Europe learnt the use of the vertical loom from Syria at a quite early date. Whereas in Syria both the two-beamed and the warp-weighted loom were in use simultaneously, Europe preferred the latter type, and it seems to have been the only one employed even in lands where culture was most advanced; right across the continent, from Greece to Norway, the finding of great quantities of loom weights on Bronze Age sites proved the ubiquity of the machine. Because the standards of life were so much lower in these countries than in Egypt or Mesopotamia there was no call for the fine qualities of stuff made there; because too on the warp-weighted loom the cloth is woven from the top downwards and the weft cannot be driven home so tightly, the tendency is for the cloth to be loose in texture and relatively coarse. The earliest examples come from the Swiss lake villages and date to the middle of the third millennium BC; they are of linen. Some of these are in twined work like basketry and can scarcely be called textiles, but others are definitely woven on a warp-weighted loom; a few have weft stripes, and there is one specimen, dated to about 2000 BC, of Soumak weave in which there are alternate rows of plain weave and weave with the weft wrapped with the fingers round the warp threads.

The next examples—and there are plenty of them—are those, well preserved by the action of peat, found in Scandinavian graves of the twelfth century BC; they are woollen stuffs, plain weaves with a maximum count of 13 warp and 10 weft threads to the square inch and therefore very coarse in comparison with contemporary Egyptian fabrics in which the count may be as high as 150 by 60. Some of the garments have patches of embroidery. It would seem that the Europeans of the Bronze Age experimented with and mastered a number of weaving techniques, but they did not originate them; the weavers borrowed the principles of their craft from Asia and, because their simple-minded clients were none too exigent, they aimed at no more than a modest quality of production; moreover, whereas in the eastern markets demand was such that weaving became a professional industry, in

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Europe it long remained a domestic task limited to the needs of the house, non-competitive and therefore conservative in the character of its output.

In the eastern countries also weaving had started as a purely domestic duty carried out by the women of the family, and right down into the Iron Age the housewife continued to be the 'spinster' and the weaver of household stuffs. In the great houses of the Egyptian nobles the womenfolk would be so employed, as we can see on the tomb reliefs and in the wooden models of the Twelfth Dynasty, and in this as in other respects such a house would be largely self-sufficing; thus in the older Egyptian texts the terms 'weaver' and 'maid-servant' are synonymous, and it is only occasionally that their special task is distinguished by the title 'servants of the goddess Neith', the patroness of the art. In Middle Kingdom texts male weavers begin to be mentioned, and even 'weavers' shops', from which it is clear that weaving was becoming a commercial industry. Later we hear of 'chiefs of weavers', and the actual operatives are sometimes described as 'foreigners' or, more explicitly, 'Syrians', but nothing is said as to the way in which the industry was organized. Since Pharaoh himself owned the greater part of the flax-growing areas of Egypt and his harvest was so important that it was placed under the control of a high officer of the court, it may well be that Pharaoh held a monopoly of cloth-making, as of so many other trades—a monopoly, that is, of cloth made for trade and export, which would not interfere with the domestic industry practised in the noble houses[34] and in the cottages of the serfs alike; certainly the employment of Syrians would be consistent with royal ownership.

In the other Middle East countries also weaving was at the beginning the women's task but tended to pass into the hands of men when finer makes required greater skill and when public demand so raised prices as to make the business worth a man's while. Thus with the Hebrews of the Exodus the elaborate hangings of the tabernacle, 'embroidered in blue and in purple, in scarlet and in fine linen, the work of the weaver, of those that devise cunning work' were made by Aholiab son of Ahisamuch and the 'wise-hearted men' taught by him; but ordinary weaving was done by the women, as when Hannah made yearly 'a little coat' for her son.

*The Factory*

For the Mesopotamians, dependent as they were upon foreign trade, and with woven fabrics of all sorts the chief items of export, cloth-making was too important economically to remain a domestic industry; men took part in it early, and it was carefully organized. The profession was hereditary. All professional weavers, wherever they worked, were members of a guild headed by a guild-master; he carried through all negotiations with the government officials, supplied them with lists of the members and arranged the payment of taxes due upon the goods produced. Most weavers worked not independently but in factories.[35] Work was highly specialized; the spinners, the

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dyers and the fullers belonged to separate guilds, but even within the weavers' guild there was specialization—we hear of linen-weavers, wool-weavers, weavers of coloured goods. Some of the factories were private concerns run by wealthy merchants; there may have been royal factories, for King Gimil-Sin, of the Third Dynasty of Ur, seems to have owned the workshops in which 'the garments of Gimil-Sin' were made; many belonged to the temples and manufactured goods not only for use in the service of the god but for the export trade also. The archaeological evidence for this is limited to a single case (one service room in the great Nin-gal temple at Ur had contained a loom—judging from the fact that there was a weaver's pit in the floor it would seem to have been a treadle loom) but numerous tablets throw light upon the subject. The weavers employed in the temple factories were both male and female; very often they were slaves (and in that case might be detailed for quite different work, such as helping to clear out irrigation-channels) but others were free citizens, and judging from the receipts issued by the temple authorities some of these may have worked at home, taking the thread from the temple stores and bringing back the finished cloth. Detailed account-tablets list the individual workers, the amount of wool received by each, the quantity, weight and quality of the cloth made, and the payment in kind (which in the case of slaves would be merely rations) over periods of a month or of six months; note is taken of deaths, of absences or of substitutes employed in place of a sick employee (Ur Texts, III, 1554); an item such as 'payments for the sick, for the days of absence (when unclean), and sundry expenditures of female workers for one month' has a curiously modern ring. Not less businesslike was the stocktaking, as, for instance, in the cloth-stores of Nannar, the Moon god, in his temple at Ur; the lists are immensely long (Ur Texts, III, 1504) and most detailed, giving measurements, weights and qualities and noting issues, generally against receipt—'Gift of wool to the royal musicians at the great smithy; receipt of Mašaga'.

Very similar employment ledgers and stock lists deal with other trades carried on in the Third Dynasty temples; we have those of the sculptor's shop, the goldsmith's shop, the lapidary's shop, the carpenter's shop, the smithy, the fuller and tanner's shop, the tailor-cutter's shop and the caulker's shop (Ur Texts, III, 1498), summing up the business done in them for the twelve months of the eleventh year of King Ibi-Sin. It is clear that the great bulk of goods intended for the market were manufactured under factory conditions and that under the Third Dynasty of Ur the temple workshops were the main producers; but that there were plenty of private concerns cannot be doubted, and constant references in the temple records to the hire of outside labour—including skilled labour—imply that there were also independent craftsmen working on their own.

After 2000 BC conditions seem to be modified. Individual workshop-owners play a larger part and civilian associations take over a good deal of what had been temple trade. The temples and the royal estate were still

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manufacturing centres but were now working for the market much more than formerly, and they now had to meet far more competition; the business documents of the Larsa and Kassite periods come for the most part from the archives of civilian merchant families. The change of ownership must have had the result of increasing the power of the trade guilds and, incidentally, of raising the status of the craftsman; in the temple workshops the majority of the workers were slaves; in the privately run factories the majority would be freemen though slave-labour also was used,[36] and even when a slave was apprenticed to learn the trade his rights were properly safeguarded and he might even look forward to entering into partnership with his master at the end of his term of apprenticeship.

## NOTES TO CHAPTER IV

1. Professor F. Schachermeyr points out that the great river valleys were not the only sites of permanent occupation as attested by the discoveries at Jarmo and Jericho. See L. Braidwood, *Digging beyond the Tigris* (New York, 1953), and K. Kenyon, *Digging up Jericho* (New York, 1957). For the controversy surrounding the dating and relative age of the sites of Jarmo and Jericho, see *Antiquity*, XXX (1956), and XXXI (1957).
2. S. N. Kramer, *From the Tablets of Sumer*, p. 61. The quotations are for the most part *verbatim*.
3. See p. 520 below.
4. On the difficult problems concerning the domestication and utilization of the camel see, among others, R. Walz in *Zeitschrift der Deutschen Morgenländischen Gesellschaft*, 101 (1951), pp. 29–51, and IVème Congrès International des Sciences Anthropologiques et Ethnologiques, Vienne 1952, *Actes* (publ. 1956), pp. 190–204; W. M. Misekell, in *Southwestern Journal of Anthropology*, XI (Albuquerque, 1955), pp. 236–2. On the camel in Egypt see also the bibliography in Institut Français d'Archéologie Orientale, *Bulletin*, XLIX, n. 2 (Cairo, 1950).
5. Professor F. Schachermeyr stresses also the role of the Hurrians and the Mitanni to both of whom the use of the chariot was known. There is evidence that horses were imported from Armenia at an even earlier date. See F. Hančar, *Das Pferd in prähistorischer und früher historischer Zeit* (Wien, 1956), pp. 550 sq.
6. cf. *supra*, p. 410, n. 25.
7. Some authorities have maintained 'that the Indus valley people knew the horse at about 2500 BC at the latest'. See R. C. Majumdar, ed., *The History and Culture of the Indian People:* I, *The Vedic Age* (London, 1951), p. 194.
8. Lewis-holes are slots cut in the stone so as to provide a grip to pincers or other tools used in moving the block.
9. Professor J. Leclant observes that Egyptian colonnades, particularly during the later period were covered with wooden roofs [see *Les Cahiers Techniques de l'Art* (Strasbourg, 1957), p. 37, n. 71]. Wooden beams of considerable dimensions may have been employed, since, as early as the Old Empire, during the Fourth Dynasty, the boat found near the Cheops pyramid comprised enormous planks of wood up to 23 metres in length; see H. Ricke, *Orientalische Literaturzeitung* (1959), col. 22, and *infra*, p. 596, n. 32.
10. Professor J. Leclant draws attention to the fact that the Egyptian temples also included considerable areas of brickwork; all the surrounding walls were, for instance, in brick. Nor should it be forgotten that this far less resistant material has not always survived the

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passage of millennia, nor has sufficient attention always been paid to it by excavators who were almost always primarily in search of stone and who experienced the utmost difficulty in extracting the bricks which were mixed with the accumulations of silt in which they lay. On the difficulty of the excavation of sun-dried brick in Egypt, see *Orientalia*, Vol I (1950), p. 362, and Figs 2–5.

11. An exception to this is the city wall of Hattusas where there remain at least five courses of heavy masonry; but the blocks are roughly cut to shape but not dressed as ashlar. There are late exceptions, as one at Carchemish.

12. Professor I. M. Diakonoff doubts whether nationalist sentiment played any role here.

13. Professor I. M. Diakonoff maintains that it is impossible to speak of government before the end of the urban revolution.

14. Professor I. M. Diakonoff considers that the attribution of sentimental origins to plano-convex bricks lacks conclusive evidence.

15. The discoveries of Sakaria Goneim at Saqqarah have led to the abandonment of the idea that the Sinai relief is First Dynasty Semer-Khet. It is rather a Third Dynasty Semer-Khet relief. cf. *Orientalia*, XXIII (1954), p. 304; Professor J. Černý, *The Inscriptions of Sinai*, II (1955), p. 53.

16. It is worth remarking that when a state silver coinage was introduced in Asia in the eighth century BC the Syrian merchants commonly surcharged the coins with their private stamps as a guarantee of the purity of the metal.

17. On iron metallurgy in Egypt, the Sudan and Africa, see Jean Leclant, Colloque International. Le fer à travers les âges, *Actes* (Nancy, 1955); Memoire No. 16, *Annales d'Histoire* (Nancy, 1956), pp. 83–91.

18. Doubts have been expressed as to the exact nature of the *ayas*. See R. C. Majumdar, ed. *The History and Culture of the Indian People, I, The Vedic Age* (London, 1951), p. 397.

19. Professor Shigeki Kaizuka and his colleagues point to the discovery of an example of iron edge put on bronze weapons which appears to date from the latter part of the Shang dynasty.

20. To the ancient Egyptians, the God Ptah was the patron of the goldsmith craftsmen, connected with dwarfing and certain forms of physical deformation. See P. Montet, 'Ptah-patèque et les orfèvres', in *Revue Archéologique*, 6ème série, XL (1952), pp. 1–11.

21. See C. F. A. Schaeffer, *Ugaritica*, II (Paris, 1950), pp. 56–115. If the facts are beyond dispute, Schaeffer's theory seems hypothetical to Professor F. Schachermeyr.

22. Parimachu (or rather Pareamakhu, which is the transcription of the ancient Egyptian Paraemhab, or Paraemhat) seems in fact to have been a doctor. (E. Weidner, *KUB*, III, No. 67); see E. Laroche, *Revue Hittite et Asiatique*, XV, 60 (1957), p. 87, No. 174, 3, and the bibliography contained in Jean Leclant, *Bibliotheca Orientalis*, XV (1958), p. 232, n. 44.

23. A case in point is that of the architect Nekhebu in the Sixth Dynasty. He says, 'His Majesty found me a common builder, and His Majesty appointed me to the offices of Inspector of Builders and Superintendent of a Guild. And His Majesty placed me as King's Architect and Builder, then Royal Architect and Builder under the King's supervision. And His Majesty appointed me Sole Companion, King's Architect, and Builder in the Two Houses.'

    In fact, Nekhebu's elder brother held all these offices and Nekhebu had worked under his brother continuously, so that a certain amount of nepotism may be suspected; and Nekhebu was never a 'common builder' for he was an educated youth apprenticed to his brother 'to do the writing'. His rise, however, was none the less spectacular.

24. See Dr R. J. Forbes, *Studies in Ancient Technology* (Leiden, 1955), p. 123.

25. As a scholar on behalf of the National Commission for Israel points out, the potter's wheel appeared almost contemporaneously in Mesopotamia and Palestine, some time in the second half of the fourth millennium BC. Clear traces of the wheel can be observed on Chalcolithic vessels from Ghassul beyond the Jordan.

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26. In the opinion of Professor D. J. Mulvaney, students of prehistoric art might dispute Sir Leonard's remark regarding the slight aesthetic value of the Beaker pottery.

27. See H. G. Creel, *The Birth of China* (London, 1936), p. 105.

28. The subject is carefully treated by H. C. Beek, 'Glass before 1500 BC', in *Ancient Egypt and the East* (London, June 1934).

29. Professor F. Schachermeyr points out that in the very earliest periods, before pottery had been invented, there was a very important stone-bowl culture in Cyprus, Syria, and Palestine (Jericho, Abu Gosh) as well as Mesopotamia. Later on, stone bowls were brought from Tell Halaf to Anatolia, Soskie and the Danubian basin.

30. The reference is to alabaster lamps and unguent jars; the lids of the Canopic jars were carved by sculptors, not by vase-makers, and the difference is striking.

31. There were, however, elephants in north-western Syria. See pp. 584, 788, 790 (n. 15); also R. O. Barnett, *Journal of Hellenist Studies*, 68 (1948), pp. 6–7.

32. Professor J. Leclant draws attention to the great cedarwood boats of the Fourth Dynasty, the elements of which were discovered in 1954 in perfect order in something resembling a dry dock to the south of the Cheops pyramid at Giza. These were 43 metres long, and as high as 7 metres at the stern and 5 metres at the prow. The longest pieces serving as the framework of the hull are 23 metre-planks, 50 centimetres thick and 75 centimetres high, each weighing 2 tons. The monoxylic oars were 9 metres long. Thus excellent raw materials were available to the Egyptian carpenters. Particular attention should be given to the method of mounting the craft, almost entirely without the aid of any metal element (only three copper nails were found for the whole boat).

    The planks were pierced with holes making it possible to thread cords binding one plank to another. These cords were passed inside the boat and, except in rare instances, were not visible from the exterior. Thus the boat was constructed of planks literally 'sewn' together. In the water the wood swelled, while the cords tightened, thus ensuring perfect junction of the elements, and making the boat waterproof, so that it was unnecessary to caulk the hull.

33. 'The priests wear only a linen garment and shoes made of papyrus; it is forbidden for them to adopt other clothes' (Herodotus, II, 37); 'the priests do not introduce woollen garments into the sanctuary, nor are they buried in them; the religious law forbids this' (Herodotus, II, 81). Similar taboos are set forth in the Gnomon of the Idiologue (71, 75–76) and various Greek papyri.

34. H. E. Winlock, *Models of Daily Life in Ancient Egypt* (Cambridge, Mass., 1955).

35. Professor I. M. Diakonoff would have preferred the word 'workshop' rather than 'factory'; for him the latter term is more usual in connection with machinery and hired labour.

    But for Sir Leonard Woolley a single craftsman has his 'workshop'; what is discussed here is a big shop with numerous work people employed by a single owner who is not himself a craftsman. Places of this sort did have machinery—for weaving, for instance—and much labour, even if it was slave-labour and not hired labour.

36. The text of this paragraph is based partly on the comments of Professor I. M. Diakonoff.

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[D.A.I.

25 *Indus Valley Civilization: painted pottery (Mohenjo-daro Cemetery H) burial jars*

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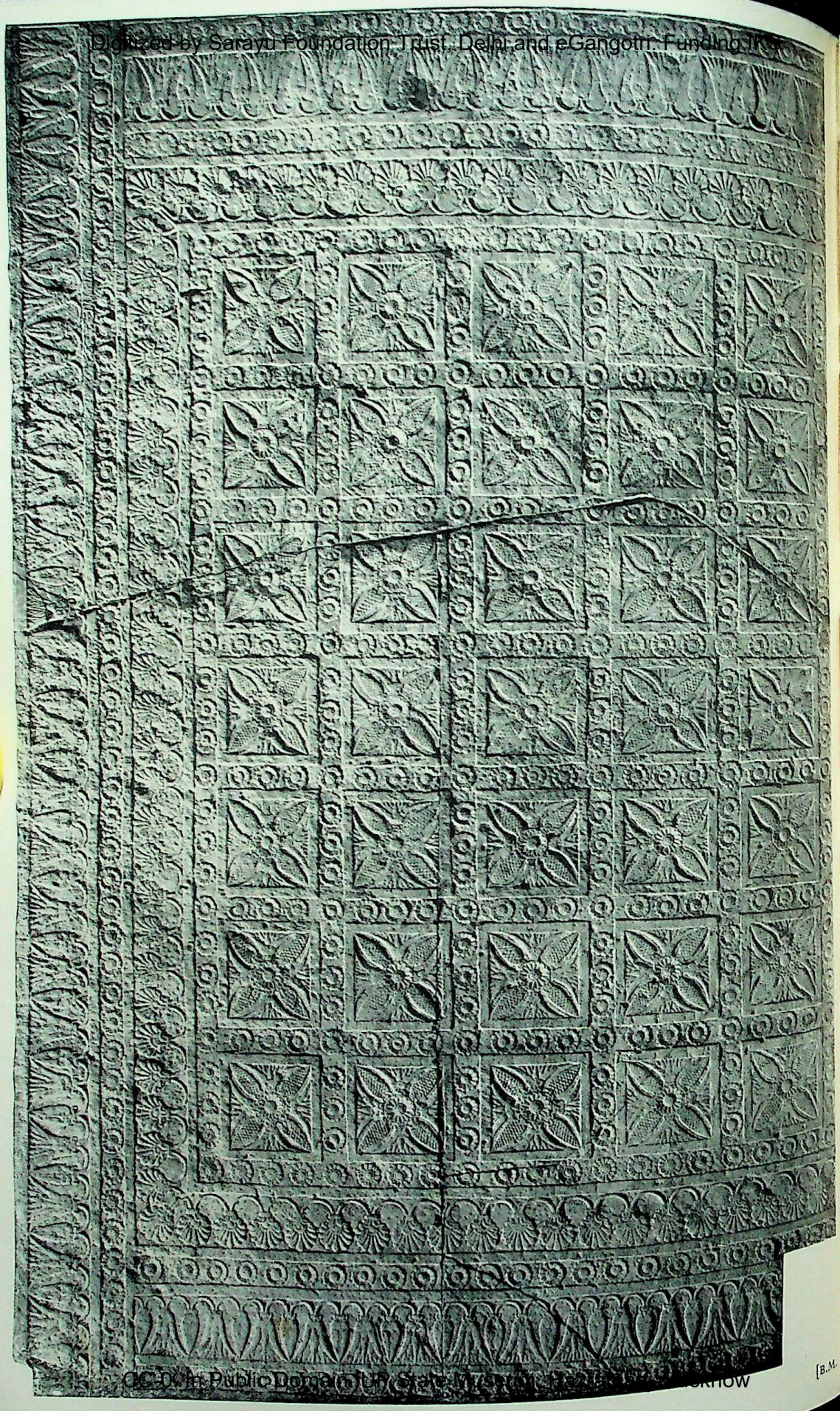

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26. A [illegible] of a woven rug

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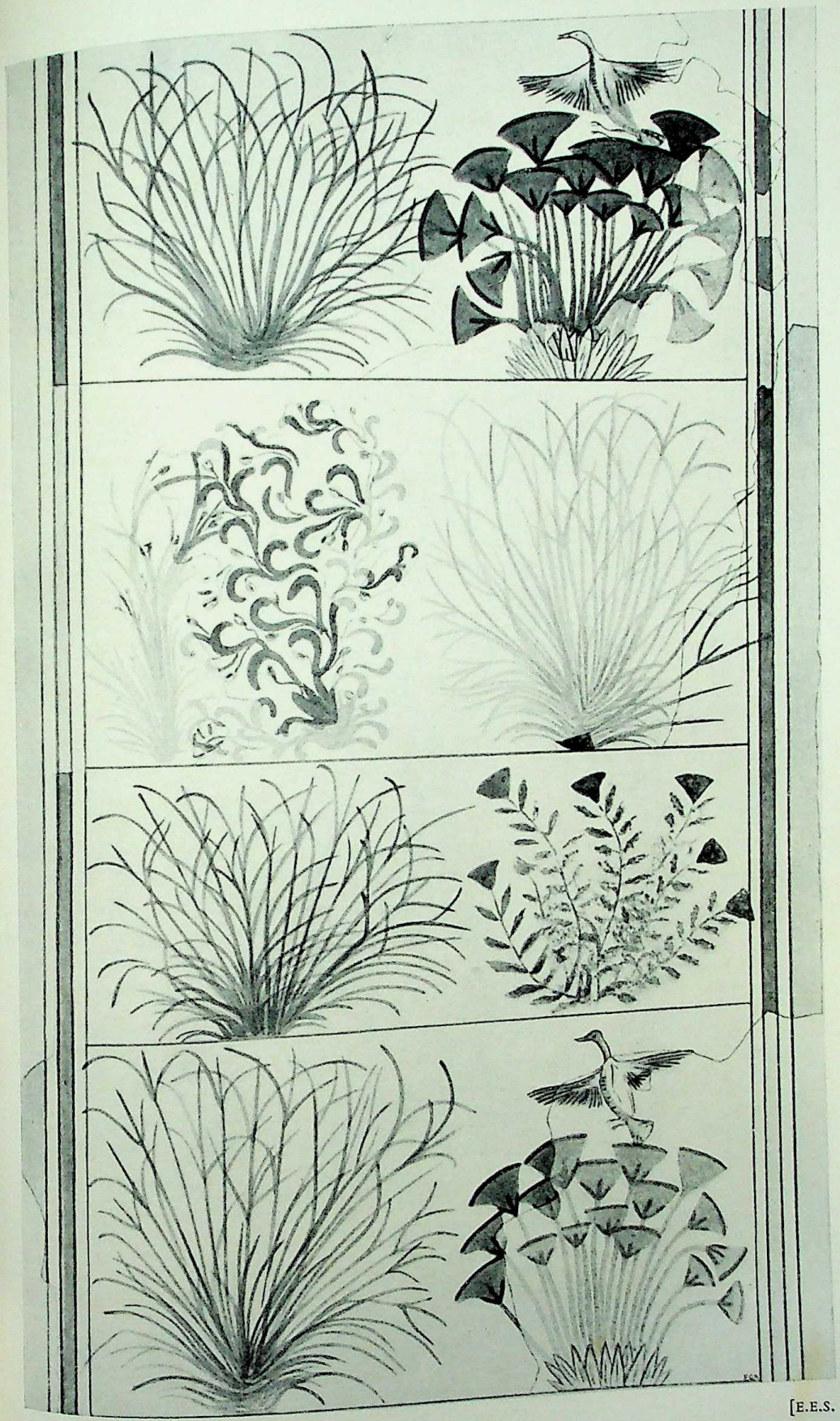

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27 *Tell el Amarna: floor frescoes*

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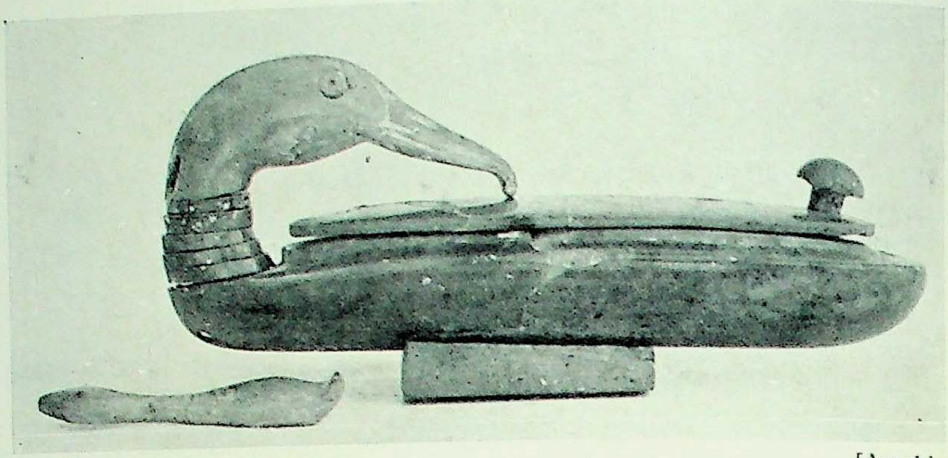

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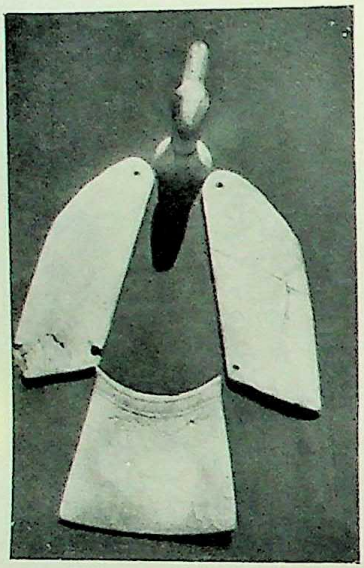

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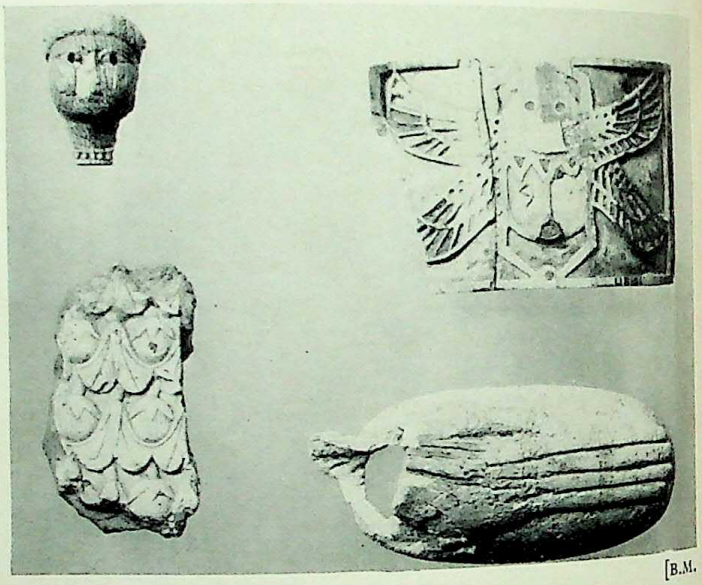

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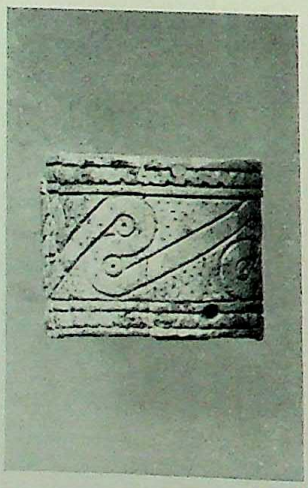

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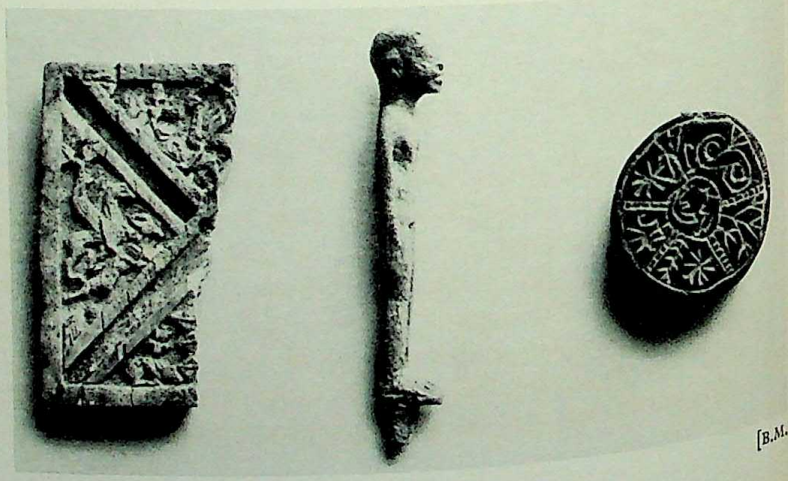

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CHAPTER V

# THE ECONOMIC STRUCTURE

## TRADE

TRADE, in the simple form of barter, is as old as man. Man's wants have never been limited to what he could produce for himself; and if he could not by force seize that which he coveted then he was prepared to acquire it by exchange. Should he happen to possess something that other people desired he might be able to live on the proceeds of barter; when local demand was satisfied he would look for clients farther afield, and where the objects to be bartered were small and easily portable his market might extend very far. Thus in the Chalcolithic Age, we find in the house ruins of the early al'Ubaid period at Ur beads made of amazonite which must have been imported from the Nilghiri hills of southern India; presumably they had not come directly but had been passed from hand to hand, but even so they illustrate in a surprising fashion the ramifications of international exchange. Such early contacts, casual as they may be, are noteworthy as explaining the interaction of local cultures, but they are no more than the background of trade proper; the sporadic and unorganized adventures of the individual pedlar led up to but scarcely form part of the history of commerce.

As we have seen (Part II, Chapter IV, Metallurgy), it was the introduction of metal and the development of metallurgical science that more than anything else made trade essential. The smith had no time for anything outside his own profession, and he was manufacturing things which other people could not make but everybody needed; exchange therefore was a mutual necessity. But the smith's raw material was seldom to be found close at hand; he had to rely upon large-scale imports, which again had to be paid for, and that meant organization of a far-reaching sort; the retail trade with his neighbours at home was easy enough, but the importation of ore or crude metal from abroad was a business with which he could not cope himself.

In different countries the problem was approached in different ways. On the one hand we have, in Egypt, where 'Egypt' and 'Pharaoh' were identified, a system which corresponds to what in the modern world would be called the nationalization of industry. On the other hand, in Mesopotamia, by what we may term a capitalist system,[1] the individual merchant acts on his own initiative but within the limits of the law and subject to the taxation imposed by the state in the general interest. And, lastly, in certain communities such as the Phoenician coast towns, it would seem that the merchants (of whom the ruler would be one) controlled the state in the interests of trade. These differences were not due to ideologies deliberately formulated: man had not

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then acquired so philosophical an outlook; they resulted mainly from their economic character and resources; but they were very real, and it is interesting to observe the success or failure—and the reasons for the success or failure—of commerce organized on principles so fundamentally opposed.

*Egypt*

In Egyptian texts, down to the end of the second millennium BC, there is nowhere any mention of merchants. This silence does not mean, as some authorities have assumed, that commerce was non-existent, but it does imply that private merchants, even though they existed and might become wealthy, yet enjoyed no such social rank as would enable them to build rich tombs for themselves and thereby leave a memorial that could endure to our time. We have no knowledge of any Egyptian laws regulating trade, and this again tends to show that the private trader played no very important part in the land's economy. The fact was that all commerce was in the hands of Pharaoh, and the divine Pharaoh was, of course, a law unto himself.

As regards internal trade, it must be remembered that in theory at least the whole land of Egypt was the personal property of Pharaoh. It is true that the feudal nobility installed by him after the conquest of the delta by the rulers of the First Dynasty did in time encroach upon the royal authority and attempt to make themselves independent, but the establishment of the Eighteenth Dynasty saw the elimination of those hereditary peers and the confiscation of their landed property, which all passed again to the crown. It is true too that the great temples acquired by royal gift enormous territories, the revenues from which provided for the maintenance of the priesthood and the observance of the ritual service of the gods; but those possessions did result from royal gift, and the gift could be revoked, as when Akhenaton closed down the Amon temple at Thebes and seized its property. The time was yet to come when the priests would prove more powerful than the king, and in the meantime the Pharaohs of the Empire could fairly look upon Egypt as their personal estate. The entire produce of the land therefore was Pharaoh's. An army of administrators supervised the rural economy of the Nile valley, regulated the canal system and collected the proportion of the harvest that the tenant farmers owed as taxes to their overlord; there was little opening here for the private speculator, and although, obviously, a man might sell his superfluous grain to a townsman, or to the local baker, this was all small-scale dealing in which the state was not called to interfere. All major operations could be carried out only by the controllers of the royal granaries. Again, Pharaoh enjoyed an absolute monopoly of the stone quarries, of gold and copper mining, and of major building operations.

It was clearly to the country's advantage that the exploitation of the rich gold-fields in the eastern desert should be reserved to the state and not left to the mercy of private speculators intent on making fortunes for themselves; gold had very early become a weapon far too powerful for the ruler to allow

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of its source passing into the hands of possible rivals, and the embargo upon gold mining was justified both upon public grounds and as a dynastic safeguard.

With copper the case was somewhat different. The mines of Sinai lay far off, in a desolate country where the maintenance of mine-workers required elaborate organization for food and transport and where troops were needed to ward off raids by the wild nomads; the accounts that have come down to us of the expeditions to Sinai show that nothing short of the royal authority could have undertaken what were in fact military campaigns on a large scale. Pharaoh's monopoly of copper mining was natural and indeed inevitable in the circumstances.

The monopoly of stone quarrying and that of building construction are complementary. Only the Pharaoh built temples.[2] He was also obliged to construct his own tomb—pyramid or rock-hewn chambered shaft—with its mortuary chapel, etc.; and he would reward the faithful service of his officers by the bestowal of a tomb such as the *mastabas* that surround the pyramids of Gizeh or the (unfinished) carved and painted rock tombs in the hills behind Tell el Amarna.[3] No other stone buildings were erected in Egypt (Part II, Chapter IV, Architecture), and therefore no other than Pharaoh had need of building stone; but his own works were normally on so vast a scale that no private contractor could have undertaken them, even if it had been morally possible for Pharaoh to delegate to another the most essential of his royal duties.

The well-being of Egypt depended upon the goodwill of the gods, whom therefore it was important to propitiate, so that the building and the upkeep of their temples was an essential function of the government, that is, of the Pharaoh. It was also bound up with the personality of the divine Pharaoh, and the country could not afford his extinction, which would result from the corruption of his mortal body and from the neglect of the ceremonies which assured his continued life in the after-world. The building of the colossal tombs of the Egyptian kings was as much an act of faith as was the building of the great cathedrals of mediaeval Europe, and its object was not simply to minister to the vainglory of the ruler but to take out, as it were, an insurance policy for the country. Therefore from the moment of his accession to the throne Pharaoh was busy with the preparation of his tomb, and this had to be done by direct labour. There was no question of letting out the work to contractors; the vast numbers of labourers required were called up by the *corvée* system put into force at the time of year when agricultural work was slack, and they were in Pharaoh's own service, organized on military lines (the larger gangs were called *aperu*, a military term) and supplied with rations from the royal stores. Quarrying, transport and building were all under Pharaoh's sole control, but matters did not end there. Tombs and temples alike required sculptors and goldsmiths and skilled craftsmen of all sorts, and they too were in Pharaoh's service, as is made clear by, for example, the reliefs and inscriptions in the tomb of Rekhmirê, who was responsible for their inspection.

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Theoretically the craftsmen were free men; but the ablest of them were engaged by the king at a wage for life, and their sons after them; undoubtedly there were also free craftsmen working privately, sometimes in the employment of a great noble, sometimes entirely on their own, finding their clients in the local market; but such would scarcely be the masters of their craft.

With the state, in the person of the Pharaoh, exercising such complete control over the natural resources and over the labour forces of the country, there was clearly very little scope left for 'big business' by the private merchants. Their place was taken by an elaborate civil service acting with the authority and for the benefit of the crown. Of course there was always plenty of petty retail trade in the village market-square and in the town bazaar, though most of the things sold there, grain or oil, animals or manufactured goods, had to pay taxes to the government. But even in the field of direct trade the merchant's opportunities were very limited; as early as the Third Dynasty we hear of a 'director of all the King's flax'[4] and we may be sure that in all commodities the main stocks were either owned or controlled by the Pharaoh.

But if the internal trade of Egypt was to so large an extent a royal monopoly, the same was yet more true of foreign commerce.

Egypt, as organized by the Pharaohs, was to an unusual degree self-sufficing. The ordinary citizen could be housed, clothed and fed, could furnish himself with the tools of his trade, with the raw material required by his craft and with the ornaments desired by his wife, entirely from the resources of the kingdom; a bountiful nature supplied all the necessities of life. Egypt's foreign trade was a trade in luxuries, so far as the individual was concerned, but some at least of those luxuries were really needed for the land's well-being. The temples could not be built without heavy timbers of hardwood such as did not grow in the Nile valley, and the temple ritual demanded the use of incense which, too, the valley did not produce. Oil—'the remedy of the body'—was needed both for medicinal and for magico-religious purposes; myrrh, cassia and resin were used for mummification; silver was not found in Egypt and was therefore precious as well as beautiful, so that silver offerings would be peculiarly acceptable to the gods. Obviously it was Pharaoh's duty to arrange for the import of things serving such religious purposes and obviously it was to his interest to keep it in his own hands; foreign trade therefore became a royal monopoly.

The only profitable commercial lines were two, northwards to the Syrian coast and southwards to the semi-fabulous land of Punt; for the first, sea traffic was essential; for Punt, goods could be carried overland by way of the Sudan, or, better, could go by ship from a port on the Red Sea.

Byblos was at the start the outlet for Syrian trade. Egypt's connection with Byblos goes back to very early days, before the Two Kingdoms of the Nile valley had been unified and before Semitic incomers had founded the cities of Sidon and Tyre. From the temples of Byblos there have been recovered

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Egyptian polished stone axes, flint knives, beads and palettes dating to the pre-Dynastic age;[5] then comes an alabaster vase fragment bearing the name of Khasekhamui of the Second Dynasty and later others with the names of Cheops, Mykerinus, Unas, and, for the Sixth Dynasty, Teti and the two Pepis; clearly no private merchant could have brought royal treasures of the sort. Actually the Third Dynasty Pharaoh Sneferu mentions the return of a fleet of forty vessels bringing pine logs, some destined for the roofing of the royal palace and some for naval construction; Egypt was therefore already building sea-going ships of imported Syrian timber, probably on the Syrian model, but judging from the reliefs in the funerary temple of Sahuré (Fifth Dynasty), by methods which were inherited from the old boat-builders of the Nile. In the same reliefs we see that the ships carried their complement of regular troops, a further proof that the vessels of the Byblos line (they were called '*kebent*', Keben = Byblos) were royal property. That a great deal of the merchandise from Byblos, and later from Tyre and Sidon, was carried in Syrian bottoms to some Egyptian port designated for their use (as Naukratis was for the Greeks of after times) may be taken for granted; we see this in the case of Wenamon who, although an envoy, the High Priest of Amon in the days of Ramses XI, travelled in a Syrian ship to Byblos, and what was true of the late period must have been true of the early. The regular *cabotage* traffic was conducted by the shipmasters of the Levant coastal towns and only when some special project called for extraordinary supplies did a whole squadron of the Pharaoh's *kebent* cargo ships go out to sea; their successful return from such a mission was an event worthy to be recorded in the royal annals. But we never hear of privately owned Egyptian vessels taking part in the Levant trade.

The strict control of sea-borne traffic must have been a matter of mutual agreement, but it is not easy to determine exactly what was the relation between Pharaoh and the merchant princes of the Syrian coast. With Byblos the connection was very close. On a sculptured relief dedicated in a local temple Pepi actually calls himself 'Lord of Byblos', but the phrase may imply not so much suzerainty as seniority in a partnership. Similarly, when Pepi I's officer, Uni, leads an expedition by sea and lands on the coast below Mount Carmel to punish a rebellious tribe, the Pharaoh may merely have been striking at the base of the Beduin who had been raiding the far-off Egyptian frontier, or he may have been called in by his Syrian business ally to police the latter's hinterland. In any case, commercial relations depended upon goodwill, and where one of the parties was the Pharaoh of Egypt that goodwill was bound to have its political aspect. The various objects bearing the names of early Pharaohs found at Byblos were presumably the honorific presents bestowed upon a friend less important than the giver but none the less independent; but the danger was that the senior partner might aim at undivided control. The big portrait statues of Twelfth Dynasty kings unearthed at Ugarit were set up there not as signs of friendship but as evidence

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of Egyptian domination over yet another outlet for Asiatic trade; commerce was, as often, the forerunner of imperialism. The other danger involved in the royal monopoly was that international trade was made dependent upon the political and military strength of a single individual or dynasty. The story of the luckless Wenamon is familiar, but that example (coming after the end of the period dealt with in this volume) had its precedents in earlier times of Egyptian weakness; when the Sixth Dynasty collapsed the Levant trade collapsed with it: 'Now that the ships go no more to Byblos how shall we replace for our mummies the "*ash*" wood of which one used to make coffins for the priests and whose resin served to embalm the nobles?'

Trade with the south—with the ill-defined Land of Punt, at the south end of the Red Sea, which perhaps embraced the Yemen as well as Somaliland—was easily reserved against private enterprise but, outside the Egyptian frontier, was not subject to Pharaoh's political control. The principal imports were precious woods, ivory, myrrh and frankincense, gold and panther skins and ostrich feathers. Much of this could come overland or by way of the Nile to the southern boundaries of Egypt, brought there by Sudanese merchants or more simply by wandering tribesmen, casually, often in small consignments passed, it may be, from hand to hand (hence the ambiguity of the name 'Punt') and carried north because rumour said that high prices could be got in Egypt. Traffic of this sort goes back to pre-Dynastic times, when frontiers were ill defined, but with the unification of Egypt steps were soon taken to safeguard the southern boundary against Sudanese raiders and, at the same time, to take advantage of the commercial possibilities of the land. The obvious centre of control was the cataract region where the barren desert closes in on the rocky ravine of the Nile, forcing all traffic to take one and the same route; incidentally, it was from this ravine that Pharaoh could quarry the granite which was so prized for temple building. Khasekhemui first, and after him Sneferu, invaded the Sudan and established his frontier;[6] its maintenance was entrusted to the nomarchs of Elephantine the head of whose family bore, in the reign of Mernere, the title 'Keeper of the Door of the South', while other officials of his staff were entitled 'Caravan-conductor, who brings the products of the countries to his Lord'. Elephantine in fact became the customs house and collecting centre for overland trade with the south. Not content with the irregular arrival of merchandise dribbling up through the Sudan, Pharaoh now began to send expeditions southwards from Elephantine. These were military raids intended to maintain Egyptian prestige, to loot, and to buy. Harkhuf, the Lord of Elephantine, conducted three such expeditions under Mernere and a fourth under Pepi II; on his third journey he brought back three hundred donkey-loads of 'incense, ebony, oil (?), grain, panther skins, ivory, boomerangs and all manner of good things', and on his fourth journey he secured a pigmy, reckoned by the royal court to be the chief treasure of all. Under the Sixth Dynasty a new fortress and customs-house was built at Kerma, at the head of the third cataract, which might act

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as an advanced trading-post to which the Sudanese could bring their goods in exchange for the jewellery and the knives, the strong scents and the rolls of white or dyed cloth which then, as in the nineteenth century AD, found a ready market in Africa.

But these royal expeditions were expensive and dangerous (we hear of more than one being cut up by the savage tribes whom they encountered) and not likely to be always profitable; moreover, the difficulties of transport meant that the heavier and bulkier goods could be obtained only in very small quantities. The alternative was to make use of the sea route, but that was an adventure which, so far as we know, could be risked only occasionally and when demands were more than usually urgent. The first Punt mission recorded in Egyptian annals was organized by Sahuré of the Fifth Dynasty (there may have been earlier expeditions about which we know nothing) and it must have taxed even the royal resources. The barges that brought copper across from the Sinai mines were too small for the present purposes and probably not seaworthy; ships, therefore, sea-going vessels of the *kebent* type, had to be built on the Red Sea coast, and all the timber for these, the carpenters and the sailors, together with all their rations and equipment, had to be transported from Koptos to the improvised dockyards. When the ships were ready the soldiers had to come too, for there was no knowing what reception the squadron would get in the strange lands for which it was heading. In order to benefit by the monsoon winds the ships had to sail in June and start back about the beginning of October, and even so the last 350 miles would have to be covered with the oar in face of the north wind; January or February might see them safely home—granted, that is, that the pilots knew enough about the weather conditions and that the people of Punt could be induced to come to terms quickly. Sahuré's expedition was a success and encouraged his descendants; he brought back 80,000 measures of myrrh, 6,000(?) weight of electrum and 2,600 planks of ebony. Isesi, a later Pharaoh of the Fifth Dynasty, sent a mission which managed to procure him a pigmy. Under the Sixth Dynasty more expeditions were made, and by the time of the Middle Kingdom matters may perhaps have been made easier by the digging of a canal connecting the Nile with the Red Sea so that ships of the Mediterranean fleet could be transferred to the African trade route. In the Eleventh Dynasty the Pharaoh Mentuhotep III not only sent ships to Punt but also built road-stations and dug wells along the Koptos track. Under Sesostris II of the Twelfth Dynasty expeditions had become more or less normal affairs; but the most famous of all was that sent by Queen Hatshepsut in the Eighteenth Dynasty which brought back thirty-one living myrrh trees to decorate the façade of her temple at Deir el Bahri. That expedition was apparently the first which had gone from Egypt to Punt since Hyksos times; 'Why have ye come hither to this land which the people of Egypt know not?' cried the astonished Puntites; 'Did ye descend upon the roads of heaven, or did ye sail upon the waters, upon the sea of God's-Land?' The long gap in a profitable

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traffic shows again how, with a government monopoly in foreign trade, the collapse of the government means the complete severance of commercial ties; there were no merchants in Egypt to carry on Pharaoh's business for him.

*Mesopotamia*

In Mesopotamia the development of the high civilization of the Sumerians and their successors depended entirely upon foreign trade. The amazingly fertile soil of the river valley gave them an agricultural surplus, which was the essential medium of exchange, and the leisure which could make possible specialization in the arts and crafts as well as the appreciation of the amenities of life; but their country produced no good timber, no good stone, no gold, silver or copper; all the raw materials for the arts and crafts had to be imported in return either for agricultural produce or for manufactured goods. Some of the raw materials had to be brought from very far away, and the carriage of bulky goods such as grain over great distances was both difficult and expensive, so that it was better to make payment in something more portable and of greater value in proportion to its size and weight; the need was best met by manufactured goods, but those had to be of a quality that would find them a ready market abroad. If you wanted a good life you had to import, and to import successfully you had to develop taste and technique in industry; local conditions enforced civilization upon Sumer. Thus it is hardly a paradox to say that the Sumerians were, in their day, the world's best metal-workers because they had no metal of their own. The credit for the discovery of the principles of metallurgy must go to the peoples of eastern Anatolia, living in the Lake Van–Caucasus area; but because those people found that they could get easy money by the export of their copper they had no incentive to carry the art of metal-working beyond its purely utilitarian stage; as metal-workers they were almost immediately outclassed by their Mesopotamian clients, and it was only after the second millennium BC that they developed a school of their own—and the Urartu school even then is largely derivative. The Sumerians were driven into trade, and the trade took them far afield; they were driven into manufacture, and what they made for export had to sell on its merits; the Sumerian city states were based on agriculture, corresponding roughly to the canalization areas of the river valley, but the Sumerian cities flourished as centres of business and industry.

According to Sumerian belief the patron god of the city state was the absolute owner of the state territories. Parts of the divine estate would be retained and were farmed directly by the god's priests, with serfs as labourers, but the vast proportion was let to individuals; the latter had of course to pay their rent to the temple, in grain or cattle or farm produce, but with what was left to them they could do as they pleased, and their freedom to sell inevitably gave birth to a professional class of wholesale merchants. The temple priests also engaged in trade; the enormous stocks accumulated in the god's store-chambers were more than sufficient for the needs of the temple and the surplus

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could be sold, providing funds for the maintenance and adornment of the shrine; and since in the theocratic state of early times the god and the government were synonymous we find the state competing in the market on equal terms with the private merchant. The interesting feature of the Sumerian economy is just this. Because trade was the life-blood of the community the government was bound to supervise and regulate the activities of the trader; it was obliged to ensure fair dealing between buyer and seller, because fraud destroys credit, and to protect the merchant, because his business is to the state's advantage; but, as if recognizing that individual initiative is more likely to succeed in commerce than is a bureaucracy undisturbed by competition, it made no attempt whatsoever to replace the private trader by the state. Throughout Mesopotamian history the merchant had, within the limits of the law, a free hand to carry on his business, and it is worth noting how far more effective his purely commercial activities were than those of a government department with its political background. Thus Pharaoh of Egypt might solicit a Hittite ruler, over whom he had no control, for a consignment of iron, and receive a more or less polite refusal, or when his military powers ceased to command respect, might find his demand for cedar-wood contemptuously rejected by a petty prince of Byblos; but the Mesopotamian merchant could carry on trade with central Anatolia—a land into which a Mesopotamian army had only once ventured—or with an Indian state distant beyond surmise. Moreover, with this capitalist system, the breakdown of the political state did not involve the collapse of trade. Ur, as the capital city of Mesopotamia under the kings of the Third Dynasty of Ur, must then have reached the height of its prosperity; it was sacked and laid waste by the Elamites, but under the Larsa Dynasty which the Elamites installed, the city, reduced politically to the grade of a provincial centre, carried on its manufactures and its foreign trade much as before and seems still to have ranked as the commercial capital.

The Code of Hammurabi has preserved for us some at least of the laws regulating both internal and foreign trade. Because it was a strict rule that the details of every commercial transaction should be recorded in writing, and many thousands of such documents survive, much can be learnt about the operation of the laws and the general activities of the merchants; in addition there are various texts which incidentally throw light upon trade questions, while archaeological discoveries have contributed not a little to our knowledge. Out of the vast amount of specialized detail it is possible to obtain a fair picture of the general principles and methods of commerce, both internal and external, for the whole period with which we are here concerned.

Retail trading in the home market had of course begun with simple barter. But at a very early date such transactions, though they retained the outward form of barter, goods of one sort being exchanged for goods of another sort, were in fact sales; the objects were not merely balanced one against another but were separately valued by reference to a common standard, and those

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values had to be brought to a common total; thus A sells to B a house worth six talents for three rolls of cloth, value four talents, and ten sheep, value two talents. The original medium of exchange, natural in a land pre-eminently agricultural, had been grain—just as the original unit of weight was a barley-corn. With the introduction of metal a second medium was added, copper, the ratio between them being fixed, so that in a written assessment of price both media would be mentioned, or either. Later, as wealth increased, silver and gold came in as standards; gold (in the form of rings) came very seldom into actual use, but silver, weighed in the balance and duly tested for quality (though it might be guaranteed by a stamp such as 'the seal of Babylon') was normal currency; thus in Hammurabi's Code agricultural wages and hiring rates are reckoned in grain, but those of the townsman in silver, while at the same time the concession is made that if a debtor has not money (i.e. silver) or corn to pay but has goods, 'he shall give to his merchant according to what he has brought, and the merchant shall not object'.

In the same way, loans were reckoned either in grain or in silver—never in terms of any other commodity. Because of the prime importance of agriculture and of the productivity of the soil in lower Mesopotamia, where a thirty- or forty-fold return was but a normal crop, interest on loans was high; under the Third Dynasty of Ur the rate was $33\frac{1}{3}$ per cent, and this was confirmed by Hammurabi's Code so far as grain was concerned, but for silver the rate was only 20 per cent, and in the Larsa period grain too came down to the same figure. The fact was that it was impossible to fix any rate by law. In the case of a dispute brought before the courts the law would be invoked and the legal rate of interest would be imposed; but in commercial ventures the rate charged by the lender would obviously be in proportion to the risks involved and every such transaction would be decided on its merits; thus, under the Third Dynasty, we find an instance of the interest on a silver loan reaching 25 per cent, and very often it falls well below 20 per cent. It was to the state's advantage that money should be easy, and the palace and the temple (i.e. the state) would prevent an exaggerated rate of interest being exacted by private moneylenders by granting loans at 12 per cent or less; thus at Sippar, in Babylonian times, the god Shamash was lending barley at 20 per cent and silver at $6\frac{1}{4}$ per cent. Further to protect the borrower against overcharge, Hammurabi enacted that the contract should be drawn up before a government official, failing which the lender forfeited his rights to the capital, and an attempt to exact interest in excess of the legal maximum nullified the agreement and the creditor lost his title to the debt.

The solicitude of the state towards the borrower only reflects the importance of trade to the community at large. Foreign trade required heavy financial backing, and it was essential that the merchants should be suitably financed. Moreover, to be successful, trade must be honestly conducted, and therefore commercial dishonesty of any kind, or anything that opened the door to fraud in business, was severely punished. Every transaction in real

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estate, loans and, in certain conditions, sales had to be in writing, with the names of the parties recorded; without that, no claim by a professed lender or seller was valid. To buy, or to receive on deposit, a man's property from his son or his slave (i.e. from other than the responsible owner) without a written bond duly witnessed, involved the death penalty. The use of false weights or measures annulled any claim made by the creditor, and the prudent merchant therefore employed weights engraved with the guarantee of the state department. The creditor on his side could require a pledge as security for his loan, and this might mean that the debtor, if he had no land or house to his credit, might hand over his wife or his children as slaves; by Hammurabi's Code such bondage could be for three years only, but in later times no limit was put to its duration so long as the debt was unredeemed.

Straight dealing in the town bazaars could be ensured by a competent police force, and petty fraud, easily defined, was a matter for the local courts; the strenuous legislation to which our sources bear witness was drawn up in the interests of foreign trade. It was in the sphere of international commerce that the Sumerian and later the Babylonian people displayed an initiative and a genius for organization which was to affect profoundly the history of man.

The goods which the Mesopotamian merchants sought had to be obtained from sources lying outside their own borders and often not even in neighbouring countries but in dominions distant by two or three removes from their own. In these circumstances a travelling merchant could not be protected by the armed forces of his own government but had to rely upon the goodwill of the government of the land through which he passed, which could be earned only by, on the one hand, the payment of customs and transit dues and, on the other, the extension to the subjects of that government of similar free-conduct rights in his own land. Generally the states of the Middle East were too well aware of the benefits they derived from the passage of merchandise to interfere with the caravans; war might, of course, cut communications and there was always risk from outlaws and robber bands, but the governments as such normally encouraged trade. Their attitude is illustrated by a late incident. A Babylonian caravan carrying a consignment of gold while passing through Canaan had been attacked and plundered by brigands; King Burnaburiash of Babylon writes to the Canaanite ruler demanding that the brigands be executed and the gold returned, otherwise 'trade between us shall stop!'; evidently he could think of no threat likely to be more efficacious. Foreign merchants were indeed welcome. When Sargon of Akkad boasted that the ships of Meluḫḫa, of Makkan and of Telmun were lying alongside the wharves of his capital his pleasure was in the arrival of trading missions from the south of the Persian Gulf; and when Ur-Nammu of Ur claims that he had 'brought back the ships of Magan' (apparently by clearing the silted-up canals) he had indeed re-opened the trade-routes, but for the use of the foreigners, not of his own sailors.

Whether by sea or by land, a traveller could pass through the countries of

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the ancient world with tolerable safety. However, a single journey—and this was especially true of land travel with all its difficulties of transport—would not make a merchant's fortune; for that he had to have regular traffic and regular contacts. Since he could not expect to find just the goods he sought ready to hand in the course of a brief visit unannounced beforehand, he needed an organization on the spot which could order commodities in advance, act as a collecting centre, make introductions and arrange payments. Some kind of local agency was indispensable. Gudea, *patesi* (or *ensī* = prince) of Lagash in about 2200 BC, describes all the stocks of building material which he imported from many lands for his temple of the god Nin-gir-su—timber from the cedar-forests and from Magan and Meluḫḫa, porphyry, also from Meluḫḫa, marble from the 'marble mountains', copper from Kimash, gold and silver and lead, asphalt and bitumen from Madga, the ships laden as corn-ships are laden when they bring in the harvest from the fields. The *ensī* may claim in self-glorification that 'Gudea the High Priest of Nin-gir-su made his way into the cedar-mountains which no man had penetrated before him', but that can be no more than a figure of speech; undoubtedly he sent his own envoys rather than employing middlemen, but to fulfil so large an order he must have used the ordinary trade channels; we may even assume (thus interpreting Gudea's phrase) that a resident agent had arranged in advance for the exploitation of a stretch of virgin forest to meet his requirements.

The character of these trading outposts differed according to the conditions of the various countries.

In central Syria, in the second half of the third millennium BC, we find at Qatna, on the middle Orontes, what is really a Mesopotamian town; it was built round a temple of Nin-Egal, a goddess particularly in favour at Ur, and associated with its King Adad-nirari (an Akkadian name) there is a high official whose title, *šakkanaku*, is in that age exclusively Babylonian. Syria was not a great power but parcelled out into petty states (in the four cuneiform texts found at Qatna more than half a dozen 'kings' are mentioned) no one of which would be able to guarantee the safety of a foreign trade agency against the jealousy or the rapacity of the others; here then the best solution was to have a purely Mesopotamian colony ranking as a kingdom on a par with its neighbours but secured against them by the military power of the home government.

In the extreme north of Syria, where the Orontes turns westward to break through the Amanus range and reach the Mediterranean by way of Antioch, the little royal city of Alalakh commanded the approach to the famous 'Mountain of Cedars' and the road across the Aleppo plateau to the eastern-most bend of the Euphrates—the road along which the cedar logs would be hauled for embarkation or to be floated downstream to Babylon and Sumer. That the timber merchants had their representatives here is likely, to say the least of it, but the two or three Mesopotamian cylinder seals found in the

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excavation of the early levels do not amount to proof, though the fact of a royal palace being designed on Mesopotamian lines supports the likelihood. Sargon of Akkad effectually did away with middlemen's profits by seizing the country and so getting the sources of supply into his own hands, and his grandson also made himself master of the Cedar Mountain. For the later periods the tablets found, coming as they do from the royal archives, tell us nothing about private trade, but in the early part of the eighteenth century BC there is mention of two hundred measures of wool coming from the controller of Idma or Arazik, on the Euphrates; woollen cloth was one of the regular articles of Mesopotamian export, and here again the Babylonian title of *šakkanaku* is applied to an official in charge of stores containing cloth.

*Kultepe*

Much more illuminating is the case of Ganeš. An epic poem, 'The King of Battles', describes how Sargon of Akkad led his army across unknown mountain passes into the heart of Anatolia to champion the cause of a colony of Akkadian merchants whose rights were being flouted by the local ruler. This, if not the actual settlement whose ruins, on the site now called Kultepe, have been excavated by the Turkish Historical Society with outstanding success, must have been of the same character. Outside the eastern rampart of the walled native town of Ganeš there stretched a built-up area of rather more than a kilometre's length which was for the exclusive use of the merchants of Assur. Clearly they were not allowed to live inside the town but were isolated and kept at arm's length—probably as much by their own wish as by the prejudice of the Anatolians; the *Karum*, as their quarter was called, might be compared with the 'factory' established by the old East India Company outside Calcutta, or, again, with the town of Naukratis which the Egyptian government assigned to the Greek traders of the seventh century BC. The date of the foundation of this colony is not yet known, but it flourished throughout the time of the Third Dynasty of Ur and until the nineteenth century BC. It was a closely-knit organization, self-governing and independent; but because it was much too far from Mesopotamia to get any military assistance thence (Sargon's expedition was a unique exception to the general rule), it had to rely for its existence upon the tact of the merchants in their dealings with the rulers of Ganeš and upon the indisputable profit that their activities brought to the country. Their main business was the export of copper and as the tablets found in their archives prove they had by their strict application to the business brought their commercial technique, and also the legal practices arising from their profession, to a stage even more advanced than that of their colleagues at home.

Kultepe is not the only Anatolian site where a Mesopotamian trading outpost has been discovered; there was one at Boğazköy, and there were probably others conforming more or less to the same pattern. For the pattern has its analogies elsewhere. At Ur itself there was a *karum* lying outside the

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walls of the city, and as appears from one of the phrases used, administratively distinct from it; merchants were members of the *karum*, they settled their accounts there, they could keep their business assets there and if they managed their assets from there they did so as members of the merchants' guild. It was not a residential area as the Ganeš *karum* was forced by local conditions to be, but more like what the Royal Exchange was for eighteenth-century London, and a member of it was supposed to act 'like a gentleman' —*mâr awēlim*—that is, to observe certain ethical and social standards of conduct; all agreements were made and contracts lodged in the local temple of Shamash the Sun god (we have already seen Shamash acting as banker in the city of Sippar), so that the religious sanction re-enforced the moral code.

The texts made it clear that the *karum* was pre-eminently the changing-house for external, i.e. inter-city or international trade. Accordingly we may assume that there the Ur merchant met the representatives of the merchants of India. The archaeological evidence for the Indian trade takes it back to Early Dynastic times; from the royal cemetery at Ur come beads of artificially bleached cornelian identical with examples from Mohenjo-daro, there was a golden monkey on a pin in the grave of Mes-kalam-dug, and carved stone vases from Mehi (of the 'Kulli' culture, see p. 452) are not uncommon in that period. By the twenty-fourth century BC we begin to find on Sumerian sites, and more especially at Ur, engraved and inscribed seals of the Indus valley type which must have belonged to Indian residents, agents of business houses at Harappā or Mohenjo-daro engaged in the import and export trade between the two countries. The connection held good throughout the Third Dynasty of Ur and into the Larsa period, and perhaps the early Kassite, when it ends abruptly, probably with the downfall of the Indus valley cities. Judging from the number of seals (Ur alone has produced a dozen, which in view of the accidents of survival and discovery must represent a great many more) the Indian colony was fairly large and trade therefore must have been on a considerable scale. There is no written evidence to explain the nature of the merchandise involved or the traffic arrangements employed, but considering the difficulty and the cost of overland transport it is likely that most goods were brought by sea to Telmun.

### *Telmun*

Towards the close of the second millennium Telmun, the modern Bahrein island, developed into one of the most important trading stations of the Middle East. Itself producing nothing more important than vegetables (Telmun onions were famous) it served as an entrepôt for goods from all the lands oversea. We have seen (p. 607) that in earlier times the ships of Makkan, i.e. of Oman on the Persian Gulf, and of Meluḫḫa, a country which for the Mesopotamian was almost fabulous but may have been the east coast of Africa, discharged their cargoes directly upon the wharves of the riverine

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cities. Business documents from Ur show that as late as the reign of Ibbî-Sin, last king of the Third Dynasty of Ur, an Ur merchant would ship his goods and travel himself directly to Makkan, though whether the vessel belonged to Ur or to Makkan is not stated. But in the Larsa period Telmun enjoys a monopoly of the Gulf traffic; everything was discharged there and transshipped for its final destination. It was perhaps the development of the Indian trade that so benefited Telmun. The big deep-draughted dhows that in the monsoon season undertook the long voyage from the Persian Gulf to Karachi or Ceylon were quite unfit for the navigation of the rivers and canals of Mesopotamia, whereas the Mesopotamian river craft had always been accustomed to the cabotage of the Gulf ports; transshipment was therefore a necessity, and Telmun offered a convenient anchorage. But for the Ur merchants it would be a great saving of time and expense if a single port and a single agency could deal with the whole cargo of the ship; moreover, since most goods were sent not on order but as a speculation in the hopes of sale, a single market dealing with commodities of all kinds was to everyone's advantage; consequently the direct voyages to Makkan ceased and all trade was concentrated at Telmun.

Ur, with easy access to the sea by canal and river (*v.* Ur-Nammu's inscription cited above, p. 607), was in a favourable position to profit by this trade. The ship-masters of Ur were formed into a guild, the *alik Telmun*, which seems to have had a monopoly of the traffic, the master acting as both captain and supercargo, doing most of the buying and selling himself, though he might agree to take with him individuals speculating on their own account. They were indeed more merchants than sailors if we may judge from their insistence on the dangers of the voyage, from the prayers and offerings made by their families on their behalf and from the ex-votos which they and their crews dedicated on their safe return. On the outgoing trip they would carry cash, i.e. silver, rolls or garments of woollen cloth, scented oils, etc., and they would bring back raw copper—the standard commodity of the Telmun trade; a tablet mentions as much as 13,200 lb. of copper in a single cargo—ivory, hard woods such as ebony, stone beads, lapis lazuli, gold, eye-paint and pearls (?). With so wide a range of goods a skilful buyer could make a handsome profit.

The history of the Gulf traffic is not without interest. Under the Third Dynasty of Ur the Makkan ships were financed out of temple funds and the merchant-adventurer paid tithe to the temple of Nannar; moreover, the title used for him is that of a palace functionary, and when Ur-Nammu revived the Makkan trade he did so for Nannar his god. It is clear that the government was at this time directly engaged in the business, either in competition with the private capitalist or possibly as holding a monopoly. In the Larsa period, on the other hand, the trade has passed entirely into the hands of the private merchants and 'the palace' contents itself with imposing considerable customs dues on the imported copper and in addition the importer pays a

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tithe on all goods to the temple of Ningal; his old official title has now given place to that of *alik Telmun*, and his sphere of operations does not extend beyond Bahrein island. The concentration of trade in Bahrein saw the fullest development of its commerce; even in Mari, far distant on the middle Euphrates, the palace archives show contacts with the island—messengers arrive from Telmun and the king of Mari dispatches caravans thither; presumably the last stages of the journey would be by the ships of the *alik Telmun* of Ur. But it also meant the gradual restriction of the mercantile horizon as direct contacts with the more remote sources of supply ceased. Then events in the Far East, probably the overthrow of the Indus valley cities by the invading Aryans and possibly some political upheaval in the south which affected Ceylon, put an end to the trade with those parts. The advantages of a general market no longer attracted to Telmun the copper of Makkan and the precious woods of Meluḫḫa; the port dwindled, and letters written from Nippur in the fourteenth century show the island rather as a supplier of certain kinds of dates than as a commercial emporium; it had reverted to its original status, with dates instead of onions as its main agricultural asset.

The travelling trader could be the agent employed by the home merchant —this seems to have been the more common practice for overland business in the early period—or he could be in partnership with him, which was the normal rule in the later trade with Telmun. The clauses in the Code of Hammurabi which regulated the relation between principal and agent, in so far as they survive (many of them are lost), aim generally at securing honest dealing in transactions in which fraud on either side was only too easy. A written document had to define the exact duties of the employee and the value of the money or goods entrusted to him, and he had to keep account of all his operations and note all profits realized. On his return he had to repay the whole capital to his employer, obtaining a receipt for it, and from the profits he took the percentage due to him by the original agreement. If through his own negligence or incapacity profits were unsatisfactory he had to return twice the capital. Obviously the merchant expected to make a profit of not less than 100 per cent on the money he risked; but if the agent could prove that losses were due 'to the hand of god or of the king's enemies' he was absolved from all liability. If the commercial traveller could not produce receipts covering his expenditure he had no claim to reimbursement. In the case of dispute between the two parties then, in the absence of written proof, the case was heard before witnesses in the temple—presumably the temple of Shamash in which the contract would have been drawn up; if the traveller was found to be in default he had to pay three times the sum owed, if the financier, six times; from the severity of the penalties one can estimate the remunerative character of the business.

Tablets of the Larsa period found at Ur, many of them actual contracts, throw much light upon the working of the overseas trade. The simplest

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[Schaeffer

29 *Ugarit: 'Our Lady of the Beasts'*

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[photo Egyptian Expedition, M.M.A.

30 *Egyptian carpenters at work*

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course was for the *tamkarum*, the capitalist, to advance the necessary funds to the merchant-adventurer at a fixed rate of interest without running any risk himself; thus, 'A and B have borrowed from X 2 *mina* of silver and 5 *gur* of oil and 30 garments as capital for a partnership for an expedition to Telmun to buy copper. After the safe termination of the voyage X will not recognize any commercial losses incurred by A and B; they have agreed to satisfy X with 4 *mina* of copper for each shekel of silver as a just [price ?].' But because profits might be very high the capitalist might try to improve his position; thus we find a certain Zubabum lending 11 shekels of silver, without interest, to a group of five partners one of whom is himself; on a fixed date the entire capital is to be repaid to him by any one, or all, of his four associates while he, as full partner, shares equally with them the profits of the enterprise. Similarly the travelling merchant was anxious to spread the risk of the voyage. Before starting on it he might sell for cash 'a share in the sea expedition', thus effecting a form of maritime insurance; usually he would insert in the contract a proviso that the cash advanced by his *tamkarum* partner was due for repayment only on the safe return of the ship; sometimes the advance is specified as 'a favour', i.e. an advance made on the credit of the borrower without any pledge or security being deposited with the lender, in which case the loss of ship and cargo would fall entirely on the financier. Another safeguard for the *alik Telmun* was to spread his investments; thus one and the same man on three occasions appears as captain and supercargo borrowing the cash to finance his voyages and on twelve occasions advances money himself to finance the voyage of others.

A ship setting out for an overseas market could be laden with any kind of saleable goods, but for the commercial traveller journeying by land with only donkeys for transport bulky and heavy merchandise was to be avoided as far as possible.[7] He could take silver, but that being itself an import, its use abroad would not prove of advantage to the exporter, though it might be in some areas the best medium for purchases; its intrinsic value too made it a risky thing to carry. The difficulty was solved by what might be called letters of credit, a system facilitated by the existence of established agents on the trade-routes. The traveller, starting with a consignment of grain, might sell it in some town on his road, receiving a signed tablet with the value expressed in copper possibly, or in silver, with which he could buy there or elsewhere something to the same value which he could sell at a profit farther along on his journey. Again he might realize his promissory note not necessarily in the form of the actual goods mentioned therein, or even in actual goods at all, but in the form of another note guaranteeing the delivery of some commodity for which there was a demand farther north. A clever salesman could effect several operations, and make a profit on each, in the course of a single journey. Since there was no coined money he was not troubled with difficulties of foreign exchange at the various frontiers; his tablets, payable on demand by the agents to whom he was accredited, were the ancient equivalent



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of a paper currency based on commodity values, and made possible a commerce extending far beyond the boundaries of his own country.

*Phoenicia*

We have not the evidence to show how far such a system was worked in other lands than Mesopotamia. The presence of Indians in Ur suggests something of the sort, but there are no documents to supplement the witness of the seals, and for China in the Shang period even archaeological evidence fails us. As for the cities of the Syrian coast, they undoubtedly lived by and for trade. Down to 1200 BC most of their business was done in Egypt, to which they sent timber from the Lebanon forests, olive oil, cloth dyed with the famous *murux* purple, and gums; their skilled craftsmen, who were not gifted with imagination but would readily copy or adapt the designs of their Egyptian clients or of their Asiatic neighbours, manufactured in the precious metals and more especially in ivory luxury objects which commanded high prices and were eagerly sought after, as references in Homer show.

The Phoenician ships did not yet venture across the open sea; theirs was a cabotage trade along the Syrian coast and no farther out than Cyprus, itself in sight from the mainland, but the ramifications of their commerce penetrated far. Excavation on a Phoenician site brings to light a remarkable medley of weights: side by side with the Phoenician shekel of 224 grammes, itself possibly a corruption of the 258-grammes Babylonian shekel, we find the true Babylonian shekel and the Egyptian *sep* and *deben* weights, as well as units of other systems not yet identified; it is clear that the merchants of Tyre and Sidon were dealing with a mixed clientèle which included citizens of all the principal countries around them. This international trade was a very important factor in the progress of man's civilization in that it resulted in an interchange of inventions and ideas between peoples who otherwise might never have been brought into contact; the Phoenicians and the Cretans, also a commercial people whose sea-going ships had a wider range, acted as the middlemen of a cultural exchange so general in its scope and so fertilizing in its spirit that in the thirteenth century BC we can speak of an 'Eastern Mediterranean' civilization. The effects were indeed profound, but of the machinery by which they were realized we know very little. Texts from Ugarit show that the various states were in accord to protect the interests of their travelling merchants, but no documents survive to explain the organization of the Phoenician market or the accountancy system employed by the Phoenician financiers. This silence is the more curious in view of the fact that commerce was the sole reason for the existence of these maritime states; everybody there was engaged in trade. The story of Wenamon shows us the prince of Byblos as a glorified huckster; Hiram of Tyre has his own merchant fleet and is eager to undertake building contracts for his neighbours; and so it had been from the beginning. We may, if we so wish, assume that the Mesopotamian *karum* had its counterpart in the Syrian coast towns, but so

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far as real evidence goes the methods of the Phoenician and Cretan dealers might have been the most primitive methods of barter.

*Europe*

Those primitive methods were still, at the close of our period, characteristic of trade in the European continent. By the middle of the third millennium BC Baltic amber was already finding its way to Troy and to Knossos, and in the course of the second millennium the metal-workers of Hungary and Bohemia were marketing their goods westwards across Europe and into Britain; the fact of the trade's existence and its influence upon the development of western culture are of prime importance, but the manner of it was that of a world still savage. Wandering gangs of smiths would extend the knowledge of metallurgy, bronze weapons would pass from hand to hand, exchanged for foodstuffs or skins, for Whitby jet or for Irish gold; but for the history of organized commerce such traffic tells us nothing more than can be learned from any barbarous country. The needs of a civilized and a sophisticated world require for their satisfaction a trade system at once standardized and flexible, based on ultimate values but operating largely through credit; only in Mesopotamia can we observe the elaboration of such a system, and there it was developed to a state which anticipates modern business.

## COMMUNICATION AND TRANSPORT

*Land Transport*

Land transport in the ancient world was difficult and costly. Man could and did travel freely and for great distances, but what he could take with him was strictly limited to that which he could himself carry or could load on a pack animal, and the porterage of heavy or bulky goods would therefore be reduced to the minimum.

It is true that the wheeled vehicle was introduced to Mesopotamia at an early date; clay models of such, children's toys or votive objects occur in the Jamdat Nasr and perhaps in the Uruk period, i.e. in the latter half of the fourth millennium; the earliest actual examples and the most detailed illustrations come in the Early Dynastic period, about 2700 BC. But this did not solve the problem of transport. In the first place, the vehicles themselves were unsuitable. The war chariot, which if it was to be effective at all had to be fast-moving, was made as light as possible, but the four clumsy wheels, of solid wood built up in sections and fixed to the axle-tree were a serious handicap; although only two men were carried in the car it none the less required four asses—or onagers—to draw it. The other type, wagon rather than chariot, had to be drawn by two oxen; since two such wagons were found in a king's grave it would seem that they were used for ceremonial purposes, not for the carrying of merchandise. Obviously the ox-carts could have been

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employed for draught also, slow as they were, for short hauls but for short hauls only; for a long trek across country they would have been useless. For the second and decisive objection to wheeled traffic was the absence of roads. In the Euphrates valley itself the heavy carts could move about, making use of the canal banks as highways; but even there they could with difficulty risk going on the softer soil of the watered fields (it was not without reason that Queen Shub-ad's pleasure-car had sled runners instead of wheels) and for a long journey through wooded or mountainous country they were manifestly impossible. Even when, early in the second millennium, the horse was introduced into Mesopotamia and then by way of Syria into Egypt, the transport problem was not affected. For the armies of the Middle East it meant a revolutionary change, and the military power of a state depended largely on the chariotry it could put into the field; but since the right way of harnessing a draught horse had not been discovered the use of the horse for transport was hopelessly uneconomical; and, again, the lack of roads ruled out long-distance wheeled traffic of any sort.

In Egypt and in Mesopotamia therefore the transport of goods overland relied entirely upon the pack ass. In Egypt the lords of Elephantine, who were responsible for the Sudan trade, had the title of 'caravan-conductor' and one of them, Harkhuf, returning from the third expedition on which the Pharaoh Mernere had sent him, had three hundred laden asses in his train. In Mesopotamia asses were indispensable even for inter-city trade if that meant going up-stream, and for journeys abroad they were always in demand; 'As for the asses that you need,' writes one merchant to another, 'come and buy the asses. Come and buy them before they go off again'; and in the days of Sargon of Akkad a pack ass cost upwards of thirty shekels of silver, about twenty times the price of a sheep. In early days the temples and the rulers of the city states kept large herds of asses, one of the uses of which would be to bring in the produce of the temple or royal estates and the tithes due from tenants. Similarly in Egypt all local transport from field to town was done by pack asses driven along the high canal banks; in the wall-reliefs of the tombs of the nobility they appear as a necessary part of his possessions.

To the transport animals employed by the ancient peoples of the Middle East one would naturally expect to add the camel—or rather, the dromedary, the single-humped species of southern Asia, in later times so characteristic of those countries as to be an apt symbol of them. But in fact the subject is strangely difficult. The question of the domestication of the camel is discussed elsewhere (*v.* p. 521), and here we are concerned only with its use, but the evidence is far from satisfactory.

In Mesopotamia the dromedary is represented by a fourteenth-century terra-cotta head from 'Aqar Qûf and by Kassite clay figures from Warka; and it must have been known earlier because it has a Sumerian name, 'ass of the Sea', a name implying that it came from the extreme south, i.e. from Arabia; but references to it in literature are very few and far between. Only in the

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reign of Tiglathpileser I, 1098–1068 BC, do the sculptures show that the Assyrian army had camel transport; a single limestone relief from Carchemish figuring an archer on a riding-camel (apparently a dromedary) may possibly belong to the second millennium BC but is more generally attributed to the ninth or eighth century. The Egyptians certainly knew about the camel, but it is equally clear that they did not keep camels or use them for transport, and Egyptian literature has nothing to say about them.

On the other hand there are numerous references to camels in the early books of the Old Testament. Abraham is said to possess camels, Jacob has camels, both when living at Haran and later in Palestine, and Joseph is sold by his brethren to 'Ishmaelites coming from Gilead with their camels bearing spicery and balm and myrrh, going to carry it down to Egypt'; also, the Hebrews are forbidden to eat the camel's flesh. Because the Old Testament story contrasts so markedly in this respect with the silence of Egyptian and Mesopotamian literature, and also because, with seeming inconsistency, it says nothing about camels being used either by Joseph's brethren when they came down into Egypt or by the Hebrews at the exodus, it has been suggested that we have to deal here with anachronistic interpolations by a late editor of the books. There is no ground for this suggestion. Historians are agreed that the rise to wealth and power of the *mukarribs* of Saba, and of the Minyean kingdom of Arabia, was wholly due to camel-breeding and to the transport of myrrh, spices, etc., to Syria and Egypt; the Minyean success was due not to the sudden introduction of the camel but to the organization of a business which the Beduin clans had exercised in a desultory fashion for a very long time past. The trade of the ancient Middle East becomes largely unintelligible unless we admit the part in it played by the Beduin of the Arabian and Syrian deserts and their dromedaries. As nomads they were subject to no man and were the enemies of town-dwellers. Nobody but themselves could venture across the desert tracks, so they had the monopoly of the carrying-trade, but they did not mix with the people at either end. Just as the modern Anayzeh camel-drover prefers not to enter a town but to load or unload his beasts in a market outside it, and if he must needs go in will wrap his headcloth across his face to keep out the townsman's stench, so, probably, the ancient 'Ishmaelite' stopped at the borders of Egypt and there handed his goods over to the Egyptian consignee; he would not wish to go farther, and the Egyptian, who hated and feared the desert people, would scarcely have admitted him. If, as is likely, the Egyptian regarded the camel as unclean, that would explain why Joseph's brethren, seeking food from Egypt, brought only asses with them; certainly they would keep no camels in Goschen, on Egyptian territory, and the Hebrews may have got their prejudice against the camel from the Egyptians. Both the Egyptians and the Mesopotamians knew of the camel, but they knew of it only from a distance—it is hard to imagine one of the hated Sutû leading a train of loaded camels through the narrow lanes of Ur—and they had no need to mention it. None the less, the myrrh and

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spices of Arabia Felix and the foreign goods which the dhows brought from Africa or Ceylon to the harbours of the Hadhramaut and the Persian Gulf were carried up into Syria or across Sinai by camel caravans centuries before the rise of the Minyean kingdom proved how important that traffic was.

*Water Transport*

Land transport was difficult and costly; water transport was infinitely more economical; wherever then it was possible goods were carried by water.

The Sumerians and the Babylonians had the advantage that two great rivers ran through the entire length of their country, affording a double waterway which tapped the whole eastern half of Anatolia and the northern part of Syria. Down the Tigris would come timber, copper, obsidian; bitumen came from Hit on the middle Euphrates, cedar-wood from the Amanus mountains, dragged overland by oxen or by men along the easy road from Alalakh via Aleppo to the river where it runs nearest to the Mediterranean; from Biridjik would come the na-lû-a stone which Gudea imported for the building of his temple, and marble from the anti-Taurus. For this traffic three forms of craft were used, all of which still ply upon the same waters. The first was a real boat with keel and ribs overlaid with heavy planks, with blunt bows and square stern, its lines kept as straight as might be so that the need of bending the planks might be reduced to the minimum; it had a lateen sail and heavy paddle-like sweeps. The boats were built in the north country where timber was available; anything up to 30 feet in length (9 metres) and broad in the beam, they could carry a heavy and a bulky cargo downstream. Once down in the south, they could be used for local traffic on the rivers and canals, their big sails enabling them to make good headway against the river current; but they could not get farther north than the rapids below Hit, and therefore could not be used for the export trade to places beyond the Mesopotamian border. If they were not wanted for local needs they were broken up and the planks and baulks were sold; the modern version, the *belem*, is used in precisely the same way.

The other two types of river craft were, properly speaking, not boats at all. One of them was a circular leather coracle, the bitumen-coated *guffa* of today, which Herodotus described as being, after the city of Babylon itself, the most extraordinary thing in all the land; the other was the *kelek*, the ancient *kalakku*, a raft of timbers lashed together and buoyed up by inflated skins, capable of carrying a heavy cargo. The vessels came downstream easily enough, carried by the current with but little need of oars, paddles or poles except for keeping course amid-stream; but against the current they could make no headway at all, and for the boatmen therefore it was a one-way traffic. When the *guffa* reached its destination and its cargo had been discharged the leather covering was stripped from the wicker frame and put on donkey-back, to return by land to the north and to be reused for another voyage downstream; similarly the *kelek* was dismantled, the logs sold as

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timber, and the skins carried north again. This meant that whereas the Mesopotamian importer did not have to worry unduly about the size or weight of his imports—King Samsu-iluna of Babylon (1749–1712 BC) boasts of having shipped from the mountains of the west a block of hard stone of more than 35 feet (11 metres) in length, and a piece of marble of 80 talents' weight—the goods which he sent in payment had to be of a sort that pack asses could carry. It was fortunate that the Mesopotamians were skilled weavers whose cloths were held in high repute everywhere, for cloth can be baled in convenient loads; but when one considers the character of the export trade in ancient times it is well to remember to what extent it was conditioned by the possibilities of transport as well as by the taste of clients.

The Egyptians, for their inland traffic, had the Nile. In this they were even better off than were the Mesopotamians, for the great river is navigable in both directions. Going downstream a boat is carried by the current and bare-masted can make reasonable progress; going upstream the sails are hoisted and the north wind that blows steadily almost throughout the year ensures good headway. Only in the Korosko bend where the river runs from north to south and both wind and current are contrary is the vessel travelling upstream unable to advance except by the laborious help of the tow-rope, and only when the wind shifts to the south, as it does sometimes in winter in the neighbourhood of the Mediterranean and in springtime when the *khamsîn* blows, is the rest of the upstream passage at all difficult; in normal times the boatman could not ask for conditions more favourable to his craft.

The first Nile boats were modelled on the papyrus floats of the prehistoric age. Those had been mere bundles of papyrus stems, lashed together with the ends up-curved to make a pointed stem and a higher stern, the whole thing solid and therefore supported on the water by the buoyancy of the dry reeds only, not by any hollow in the hull. Such would carry but little freight, and the Egyptian therefore set himself to make a real boat, preserving the outward form of the old float but making it hollow inside; for this he required timber, and at once the difficulty arose that the Nile valley produced no better trees than acacia and sycamore whose hard and knotty growth affords at the very most a baulk of 6 foot (2 metres) length. The problem was solved by a method of boat-building unknown in any other part of the world.

The Nile boat had no keel and no ribs. The acacia baulks, a foot or more thick, were laid one upon another, like bricks, as Herodotus says, and fastened together with wooden bolts, the ends overlapping so as to dovetail together, the base line from prow to stern making a uniform curve, the cross-section more or less semicircular below and rising to the vertical above the water-line. The hull, built up in this piecemeal fashion, was caulked with tow and papyrus; it was not decked, or quarter-decked, but had thwarts for oarsmen; these in early days used paddles, sitting and facing forwards, but later on swivelled oars were introduced; paddles, one or more, served as rudders, and a single mast took the small rectangular yard-sail.

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For river transport a vessel so constructed fulfilled its purpose admirably, but it was ill adapted for voyages oversea. From the representations of sea-going ships we can see that the Nile boat design was modified to meet the different conditions. The deck from fore to aft is now flatter and the overhang of bow and stern is very much reduced with the intent that the ship should cut through the waves rather than be lifted and ride over them. The ship-builders had learnt, probably by sad experience, that longitudinal dovetailing of their hull baulks was a poor substitute for a solid keel; riding over a wave and suspended amidships with bow and stern above water the ship simply broke its back. Accordingly the sea-going vessels represented in the pyramid reliefs of Sahurê are undergirt fore and aft with heavy cables. A cable network carried along the whole length of the hull a little below the bulwarks binds it together, while high inboard a huge twisted rope, resting on forked crutches graduated in height which give it a curve complementary to that of the base of the hull, runs the whole ship's length, its ends securely fixed to prow and stern, to counteract their tendency to drop and cause the vessel to break amidships. The type of sail is also changed; the two-legged composite mast still used by Sahurê soon gave place to a single mast set amidships, and a very long spar hoisted to mast-head supported a single sail, an enormously wide stretch of canvas, its lower edge laced to a boom almost as long as the ship, which could be trimmed to the wind.

It was in ships of this sort that the Egyptian sailors ventured on the voyage to Punt and on the Mediterranean coastal trips to Byblos and the Phoenician ports; but it is hard to believe that they were indeed seaworthy. The fact that Sneferu, in the Third Dynasty, imported from the Lebanon pine logs for ship-building shows that the Egyptians themselves had little confidence in their own patchwork vessels held together with rope; the name of Sneferu's ships, *kebent*,[8] may well imply that their design was taken from the ships of Byblos, and Amenemhet, the Twelfth Dynasty Pharaoh, had twenty ships of cedar-wood; but foreign wood was expensive and only occasionally did Pharaoh feel the need for keeled ships. The river Nile was at all times crowded with craft, all built on the old lines; but foreign trade was in the hands of Pharaoh and all sea-going ships were his, and the fact was that he had little use for them. This is very clear in the case of Punt. The Punt merchandise was highly prized, and maritime trade with Punt depended entirely upon Egyptian shipping, for the Puntites had no fleet of their own; yet expeditions thither were few and far between; the Twelfth Dynasty popular tale of the marvellous adventures of a mariner shipwrecked in those waters means not that they were familiar but, on the contrary, that they were well-nigh outside human experience; when Queen Hatshepsut sent her famous mission there hers was the first Egyptian squadron to anchor off the coast of Punt for about four hundred years.

For the eastern Mediterranean trade Pharaoh must have relied very largely upon Syrian shipping lines. Phoenician merchantmen could always be

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hired, and when a strong Pharaoh like Thutmose III controlled south Syria as a province of his empire he could regard the Syrian ships as his own. When Ramses III had to meet the naval forces of the 'Peoples of the Sea', the ships which he manned with the Egyptian archers who eventually won the day were probably not Egyptian ships at all but those which had fled from Syrian harbours before the threat of the invaders and joined Pharaoh in the defence of their homes. The Egyptian merchant fleet had never played an important part in the Mediterranean;[9] after the reign of Ramses III nothing whatsoever is heard of it.

Throughout the Bronze Age the carrying trade of the Mediterranean was shared by the Syrian coast towns and by Crete. The Phoenicians of that time were not adventurous seamen. Undoubtedly they were good boat-builders and made full use of the fine timber so ready to their hand in the Lebanon forests but, keen business men, they sought nothing more than a market for their goods and finding that in Egypt they felt no call to travel farther afield. Theirs was a cabotage trade; hugging the shore and never losing sight of land, they carried their cargoes of oil and cedar-wood, silver, copper, spices and purple dye to the mouth of the Nile and came back with linen stuffs, ivory, jewellery and trinkets which their clever craftsmen could imitate for the benefit of Syrian clients in the inland towns; their maritime horizon was limited to Pelusium in the south and in the north to Cyprus, whose eastern mountains could be seen from the slopes of the Amanus, and the Cilician plain. As the link between the various civilizations of the lands bordering on the eastern Mediterranean the Phoenicians influenced the growth of each and furthered their progress; undoubtedly their own great contribution to civilization, the invention of an alphabetic script, was prompted by the polyglot nature of their business; but the colonial expansion of Phoenicia and the exploitation of the western Mediterranean was not to come until the dawn of the Iron Age.

A more adventurous and equally important part was played by the merchant fleet of Crete. The beaked vessels, driven by both oars and sails, single-masted in the early days but sometimes in the Late Minoan period having two masts, square-sailed and with high-railed bulwarks, were ocean-goers; they were built for long voyages and the Cretan mariners had no fear of the open sea. There is no literary record to give us the details of Cretan trade, but something of its extent can be gathered from the widespread discoveries of Cretan goods.

Mention has already been made of Minoan pottery found at Ugarit on the Syrian coast and in Egypt (p. 392). Exports to Egypt must have been frequent; Middle Minoan vases are found there in the Twelfth Dynasty; in the Eighteenth Dynasty come Late Minoan I vases, one example occurring as far south as Anibeh in Nubia, while on the walls of tombs there are represented the splendid vases and bull-head rhytons characteristic of Minoan art, professedly tribute brought to Pharaoh by his Cretan vassals.



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An alabaster vase-lid inscribed with the name of the Hyksos Pharaoh Khyan, found in the palace at Knossos, might be a gift rather than an object obtained in the way of trade, and the same is true of a diorite statue of User, but definite proof of commercial relations is given by the Minoan weights, for many of those bearing numbers correspond exactly with the Egyptian gold units, and the parallel can only mean a common market.

Ships that could face the voyage of 300 and more miles to the mouth of the Nile would have had no difficulty in making the coast of Cyrenaica, only 180 miles away. If, as seems fairly certain, one of the signs in the Cretan hieroglyphic script represents the silphium plant, the export of which was a main source of revenue for Cyrene in the sixth century BC (as is clear from the vivid pictures on the Arkesilaos vase in the Bibliothèque Nationale), then Knossos was trading with the north African coast, and the use of the silphium plant for a hieroglyph witnesses to the importance of the trade. Such a close relation between Crete and Cyrene would explain how it was that in 1220 BC Meryey, king of Libya, could engage mercenaries from the sea peoples of the Aegean to assist him in his invasion of Egypt.

More important however were the relations between Crete and Greece. The classical Greeks, down to the time of Thucydides, preserved the tradition of Minoan sea power, as indeed they well might. The archaeological evidence of the innumerable objects of Cretan art found in Rhodes and Melos, and, on the Greek mainland, at Tiryns and Mycenae, at Pylos and Thebes, and Orchomenos, proves that the influence of the Minoans extended across the Aegean and was firmly established on the peninsula; whether or not this amounted to actual conquest of mainland bases matters comparatively little; the important and indisputable fact is that the Cretan commercial fleet opened up south-eastern Europe to the art and civilization of the Middle East. The rulers of Knossos were not the only ones whose wealth was amassed by international trade; but whereas the Egyptian ships were scarcely seaworthy and the Phoenicians were content to hug the coast, the Cretans built for themselves stout sailing-craft for long sea voyages; and their merchant-adventurers, the pioneers of the old civilization, laid, as we now begin to see, the foundations of classical Greece. When, after 1460 BC, the Mycenaeans dominated Crete, they carried on the maritime traditions of the island and, because the centre of their power lay farther west, on the Greek mainland, extended their sea-borne commerce even more widely over the Mediterranean, to Sicily, Marseilles and the Spanish coast.

There was one other sea passage which has to be taken into consideration when we study the commerce of the ancient world, but it is one concerning which our knowledge is very small; literature has nothing to tell us about ocean-borne trade between the Middle and the Far East.

The river craft of Mesopotamia have been described above, and it is manifest that such were not adequate for voyages over sea. There have also been described the guilds of the merchant-mariners of Ur who had the

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monopoly of foreign trade, but their very name, the *alik Telmun*, shows that they went no farther than Bahrein. Mention has been made (p. 611) of 'the deep-draughted dhows that in the monsoon season undertook the long voyage from the Persian Gulf to Karachi or Ceylon', but in fact nothing is known about them. When Sargon of Akkad speaks of the ships of Meluḫḫa, of Makkar and of Telmun he is speaking of foreign ships, not of Mesopotamian ships that visited those ports—indeed the Mesopotamians seem never to have known where Meluḫḫa was. After Bahrein was established as the port of transshipment we hear no more of any foreign vessels, for the simple reason that they no longer visited Mesopotamian waters; but the goods that came to Bahrein were still carried by them. From very early times there must have been the precursors of the modern Arab dhow engaged in the same business as that of the dhow within living memory; based on south Arabian harbours whose names are not recorded, taking advantage of those monsoon winds the secret of which westerners were not to learn until Roman times, they must have plied their long-distance traffic, the tenuous link between India and Ceylon on the one hand and the Middle Eastern markets on the other. History is silent about them, but those Arab sailors, as for want of a more distinctive name we may call them, were a considerable factor in the history of man's progress.

## PRODUCTION AND TAXATION

### *Egypt*

In Egypt and in Mesopotamia alike civilization was based ultimately upon agriculture and the country drew its wealth from the fertility of its soil. Consequently the primary source of government revenues was bound to be the agricultural produce of the land, and in each country the collection of such revenues was simplified by the character of the constitution.

In Egypt the divine Pharaoh was from the outset the Lord of the land and in time, with the suppression of the old feudal nobility, could claim to be its actual owner. In Mesopotamia the entire territory of a city state was the personal property of the city's god, and the ruler, king or *ensi*, as representative of the god—although in the administration he was assisted by the city council—was the real proprietor of that territory. In both countries therefore the government, vested in the person of the ruler, was in theory entitled to the whole produce of the fields; either he could exercise that right literally, taking everything to himself subject only to the costs of production, or he could work the land indirectly, letting the cultivators make what profit they could for themselves, while he received from them a fixed percentage of the harvest.

It would appear that the Egyptian Pharaohs of the Old Kingdom exploited the country directly for their own benefit. But with the organization of Egypt into districts or nomes the former system was modified. The nomarch,

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belonging to an old noble family, possessed certain lands of his own, the 'paternal estate', entailed in the family; he had also the 'count's estate' a fief conveyed to him by Pharaoh as the prerogative of his office, which reverted to the crown on his death; an unspecified part of the nome remained crown property, and a royal commissioner, together with 'overseers of the crown possessions' was attached to the nomarch's suite to take charge of the royal herds, etc.; but all the revenues from the nome were collected by the nomarch and passed by him to the treasury of the central government: 'I carried all their dues to the king's house; there were no arrears against me in any office of his.'

The dangerous semi-autonomy of the nomarchs led to their suppression and the transfer of their task to fiscal officials appointed by the crown and directly responsible to it. But side by side with this growing centralization there developed a divided ownership. Pharaoh owned Egypt in his capacity as a god, and it was seemly that his brother deities should have their share in it; Pharaoh therefore endowed the temples with estates of their own, by the alienation of crown lands, and these might enjoy certain tax exemptions. An ambitious priesthood did everything to encourage so pious a policy, with the result that before the end of the second millennium BC one fifth of the whole country had come to belong to the temples, Amon of Thebes being the chief landowner after Pharaoh himself. Of the remaining four-fifths the greater part was worked by the king's serfs under the supervision of officials appointed by him. To relatives, or to favourite courtiers, Pharaoh might grant fiefs of land which were permanent and indivisible, held upon fixed terms, and to other meritorious persons he might grant tenant-holdings which were divisible; holdings of either sort could be transferred by will or by sale very much in the manner of a modern leasehold, the liabilities on them being unaffected by the change of ownership. The tenants might in addition hold other crown property such as cattle, asses, etc., for whose use again they paid an annual assessment recorded in the tax registers kept in the White House, the central office of the treasury. All taxes were paid in kind and stored in the royal magazines; it is illuminating to find that all the goods thus brought in, grain, cattle, wine, linen, are invoiced indiscriminately as 'labour'; in other words, they are put on precisely the same basis as the *corvée* whereby Pharaoh's serfs, the people of Egypt, were called up to build a pyramid or to clean out a canal. The people and what the people produce are equally the property of their divine ruler.

The Egyptian records do not state the proportion of the harvest that actually came to the royal granaries after the necessary deductions for the livelihood of the serfs; Hebrew tradition, recounting the story of Joseph, puts it at 20 per cent, and this may be true; but the amount paid in probably had but little relation to that collected. Corruption on the part of the tax collectors was endemic and, at times when the central administration was weak, assumed vast proportions; the reforms of Harmhab in the Eighteenth Dynasty were almost

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entirely concerned with correcting the abuses of the financial bureaucracy, against which the peasants were helpless. Extortion by the fiscal authorities and by the soldiery was almost a matter of course, and Harmhab put his finger on the root of the evil when he remitted the taxes imposed on the officials themselves. For while the agricultural tax was the main source of state revenue a secondary but still very important source was the tax upon government offices. This may theoretically have been but the natural extension of the agricultural tax; thus, if the mayor of El Kab had to make a yearly payment to the treasury of 5,600 grains of gold and 4,200 grains of silver, and his assistant 4,200 grains of silver, a necklace of gold beads, two oxen and two chests of linen, it is fair to assume that this represented the proceeds of *octroi* and market taxes collected from the townsmen. But because the amount due to the central government was fixed and did not fluctuate with the amount of business done, it means that the mayor was really in the position of a tax farmer obliged to pay in a certain sum but free to extract from the taxpayer as much more as he possibly could, so as to defray any official charges upon himself and to supplement his official salary, if any.

The number of these fiscal officers was very great and the value of the goods sent in annually by them to the White House must have been enormous—unfortunately no full account of the Egyptian revenue survives—but it must be remembered that only a small proportion of the total revenue was derived from what can properly be termed taxation; by far the greater part was no more than the return on the invested capital of the Pharaoh. The peasant who cursed the exactions of a corrupt collector would never have dreamed of disputing the justice of his statutory dues, because that payment was in his own and everybody's interest; Pharaoh was Egypt, and the well-being of Pharaoh and that of the nation were synonymous. Absolute autocracy had so simplified the economy of Egypt that the viziers in charge of the treasury had no need to invent new methods of raising money; the whole wealth of the country flowed into the exchequer automatically. For the Egyptian individually the pattern of life was assured; he was left enough to live upon, no fresh demands would come to make things more difficult, and in the event of a bad harvest—the only possible disaster—he could hope to receive state assistance.[10] Viewed from the purely financial standpoint the Egyptian system was primitive in the extreme; the theory upon which it was based—the divinity of Pharaoh—is one inconceivable in the modern world. It is therefore interesting to find that, granted the identity of Pharaoh with the nation and the state, the practical application of the theory can be described in terms which seem to bring it strangely in touch with a Marxist philosophy founded on principles so wholly different. The nationalization of land, in part made possible by the liquidation of the old land-owning nobility, and the exploitation of much of it by a system of collective farms; the state monopoly of all production, mines, etc.; the state control of manufacture and of craft guilds; the state monopoly of foreign trade; the religiously held conviction

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that while it was the state's duty and interest to secure the well-being of the individual citizens, yet those individuals, Pharaoh's serfs, existed only for the state; all this, which has so curiously modern a ring, affords the strongest possible contrast to the financial principles of the other ancient state whose economy we can examine in detail.

*Mesopotamia*

In early days the entire territory of a Sumerian city state was the property of the city's patron god. It would seem that in practice this was modified to the extent that certain areas were the communal property of the citizens (who, as the followers of the god, ought to have their share in his possessions) with no further liability than that of paying tithes to the temple. The greater part however remained in the hands of the god and might be let on lease to private individuals or let on condition of services to the temple personnel, or might be worked directly by the temple; the *ensī* (*patesi*), the human ruler who acted as 'tenant farmer' of the god, was the obvious person to manage the god's estates, directly or indirectly,[11] and to all intents and purposes therefore he was himself the lord of the land. Inevitably this led to abuses. Urukagina, the reformist *ensī* of Lagash, describes how his predecessors had appropriated the temple lands for their own use—the oxen of the gods were employed for the irrigation of the lands of the *ensī* and 'the best fields of the gods formed the *ensī*'s kitchen-gardens and cucumber fields';[12] the ruler had himself to set the example of reform and 'in the house and field of the *ensī* he installed Nin-Girsu, their master; in the house and field of the harim he installed the goddess Bau, their mistress; in the house and in the field of the children he installed Dunshagga, their master'. For a brief moment, and in the city state of Lagash, the theocratic basis of the Sumerian economy was re-affirmed.

Throughout all Mesopotamian history the various local gods remained land-holders on a large scale; many of the temple estates were worked directly by slave- or serf-labour under the direction of the priests, but in this case the head of the state, *ensī* or king, was the chief administrator, combining in one office the management of the divine and the royal domains. But always there was the tendency to substitute private ownership for that of the community or of the god, and the process becomes more marked as Sumerian tradition is gradually submerged beneath practices imported by foreign conquerors. In the time of Manishtusu of Kish—who was a Babylonian Semite—we find the king purchasing three very large estates,[13] presumably communal land, ousting the 1,564 labourers who had been employed on them in order to install there his own nephew and other men of noble family. The old habit of making grants of land, either to assure loyalty or to reward service, became more common; thus, in Hammurabi's time, the officers responsible for recruiting for the army and the police received small-holdings which were inalienable, transmitted only in the male line and on the condition that the original obligations were fulfilled (or an *ilku* tax paid in lieu of personal

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service) but, on the other hand, were tax free. Contract tablets show that in the second millennium land was more freely bought and sold than in the past; it would certainly appear that to a large extent the original state-ownership had been waived in favour of a tax upon its value. Under the Kassite kings of Babylon the practice was extended, and the familiar *kudurru* or boundary stones bear witness to this; they contain copies of the actual title deeds (which were on clay tablets) and define the areas of the estate, and the text ends with curses upon anyone who interferes with the owner's rights, which are further placed under the protection of various deities whose emblems are sculptured upon the stone. The insistence in such monuments on the divine protection of private property in land suggests that the growth of a rich landed class was unpopular with the community in general, and that not only because it went against tradition but also because it tended to lower the status of the small-holder, and also to impoverish the exchequer; too many tax-free grants had been made in the past, and the Kassite kings were particularly generous in their remission of dues; thus Melí-Shipak, in the thirteenth century, confers large estates upon his son and frees them of all taxes and tithes and excuses all the labourers employed upon them from the *corvée*. Under the powerful rulers of the earlier periods, down to the First Dynasty, the temple lands paid taxes—thus Hammurabi has the temple managers and the cattle-masters of the Shamash temple brought to Babylon for the checking of their accounts—but the Kassite king Agum-kakrime granted immunity from all taxes to the estates of the gods Marduk and Szarpânâtu and gave to the priests tax-free houses and gardens, and his successors went even farther and supplied the temples with sesame, butter, wool, etc., out of the civil revenues.

Since the produce of the temple lands was very largely absorbed by the requirements of the god's service immunity from taxation may not have involved so serious a loss to the state as might at first sight appear; but the fact remained that those vast estates, the estates of the king and of some of his nobles, and a great many smaller holdings in private hands contributed little or nothing to the state treasury. Moreover, it would seem that after the fall of the First Dynasty of Babylon some of the cities also managed to obtain exemption from the royal taxes, which again would have been a serious loss of revenue. To meet the expenses of the government therefore the Mesopotamian state had to rely far more than did the Egyptian upon sources of revenue other than the tax upon land and produce.

The cost of public works was to a large extent defrayed by the *corvée* system of forced labour, which was in fact a tax upon the individual. The slaves on the big estates and the freemen small-holders were alike liable to be called up for such tasks as the digging and cleaning of canals, road-making, etc.; generally these were local needs and the district authorities would enrol local labour, but sometimes the work was of national rather than provincial importance and the net would be cast more widely, as when Hammurabi says of himself, 'by the call-up of the people of his country he has built the

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foundations of the city walls of Sippar'; or auxiliary gangs might be sent from a distance: to quote Hammurabi again, 'I am now sending you herewith 360 porters; 180 porters shall be on the Larsa building, 180 porters shall be on the Raxaba building; they will help'. The peasant would receive a properly signed and dated summons such as 'Task: brick-carrying for one day'; he could protest, and the provincial governor would hear his case; and he could obtain exemption by means of a money payment; the fact that he could do so shows that labour under the *corvée* was regarded as a tax paid in kind.

All agricultural taxes were paid in kind. Since they were not fixed but reckoned on a percentage basis they could only be assessed when the year's produce was ready to hand, for grain, after the harvest was gathered, for sheep, after the lambing season, for wool, after the shearing; and whatever the tax collector took had to be sent in to the government depots. Delays were frequent, and the exchequer did not endure them patiently—'Why have you not yet sent to Babylon the 30 lambs as your tax? Are you not ashamed of such behaviour? I am now sending you a post; as soon as you have had sight of my letter send the 30 lambs as your tax to Babylon. If you do not bring them, you will have to pay one shekel of silver for each lamb.' A very careful account was kept of all incomings and they were turned to advantage as soon as possible; the animals might be sent to join the state herds; other perishable goods were sold or lent to merchants at regular rates of interest, or were handed over to government factories for manufacture. Theoretically the annual tax was 10 per cent of the produce, but the grower would seldom escape so easily. The collection was made by tax farmers who were not professional civil servants—even the superintendent-general of taxes was not properly speaking a government official—and extortion was easy whether for their own enrichment or to gain favour with the authorities; it is clear from the tablets that the actual payments might amount to a fifth or even to a half of the yield of the land; presumably the poor suffered most.

To supplement the inadequate returns from the land there were the taxes on town goods, manufacture and trade. Here again collection was in the hands of tax farmers, but payments were for the most part in gold, and an elaborate registration of all taxpayers enabled the treasury to forecast the budget with a certain amount of accuracy and also lessened the opportunities for corruption; thus we hear of a case where two citizens had defaulted and the tax farmer had been unable to collect the amounts due from them, but none the less he had to make the full return to the exchequer; it is clear that the total had been estimated beforehand in great detail. This was made possible by the census. A register of births was kept, so that a poll-tax could easily be applied; but for taxation in general the lists dealt with property as well as with persons. The best preserved of such lists are those of the fifteenth century BC from Alalakh—not therefore actually Mesopotamian, but modelled on Babylonian originals—recording the inhabitants of villages subject to the city; their names are given and they are distinguished (as in Babylonia) into

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three classes. First come the peasants, semi-serfs, subject to the *corvée* and to military service, owners of small plots of land or vineyard, of whom it is often remarked 'has no cattle'; the next in order are the middle class, amongst whom we find tradesmen, gardeners, herdsmen and grooms; last come the gentry, distinguished by the possession of chariots (though of a few it is said 'possesses no chariot'), 'knights', if the chariots are really military, or, if otherwise, 'carriage folk'. Other lists enumerate the houses in each village, qualified by the social position of the occupant, to which in the case of a craftsman his trade may be added; we may suspect therefore a graduated house-tax.

The elaborate inventories of raw materials and manufactured goods which are common in Third Dynasty and later periods in Mesopotamia are in many cases the accountancy tablets of the temple stores and workshops, but others seem to refer to factories outside the temples and to be certified stocktaking lists used as a basis for taxation. Import duties were levied on goods from abroad and octroi duties on the country produce brought into the towns; the guilds, together with the *karum*, the Chamber of Commerce, had to furnish information regarding their business and the profits accruing from it.

## NOTES ON CHAPTER V

1. Objections to the use of this term have been raised by Professor I. M. Diakonoff on the grounds that 'The economic system of Mesopotamia, based as it was on slavery, cannot be termed a capitalist system, because the latter is based on hired labour'.

   The English definition of capitalism is 'The possession by individuals of capital or funds used in production'.

   The objection of Professor Diakonoff unduly exaggerates the part played by slavery in the Mesopotamian economy (as has been shown above) and the laws of Hammurabi and in particular the business tablets of the Old Babylonian period from Ur (*Ur Texts*, Vol. V) both show that the merchants not only used their own and borrowed capital but also hired labour. Sir Leonard Woolley has kept the term 'capitalist' in the text because to the English-speaking reader it conveys precisely the meaning that he intended; it is quite possible that some other term will prove preferable in translation.

2. An exception, as Professor John A. Wilson points out, was the funeral temple at Thebes built by Amenhotep, son of Hapou, the famous architect and great favourite of Amenophis III; see C. Robichon and A. Varille, 'Le temple du scribe royal Amenhotep fils de Hapou', *Fouilles de l'Institut Français du Caire*, XI (1936).

3. The question of the construction of private tombs in Egypt deserves further exploration

4. Lepsius, *Denkmaeler*, Vol. III, 229.

5. A scholar on behalf of the National Commission of Israel points out that these pre-dynastic objects were found below the floor of the temples; their association with the temples is, therefore, not certain.

6. As Professor J. Leclant observes, Egyptian attempts to penetrate southwards remained very fragmentary under the Old Kingdom and there cannot be said to have been any systematic policy of colonization. The Egyptians did, however, reach Nubia as early as the First Dynasty: according to a discovery made by Dr A. J. Arkell, we should read the name of King Djer on a graffito at Jebel Cheikh Soliman near the Second Cataract. The sign *stg* on the tablet of his predecessor King Hor-Aha may equally well indicate Nubia

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or what was later to become the first name of Egypt, north of the First Cataract. This is also true of the Hieraconpolis fragment showing King Khasekhamui slaughtering a prisoner. No contemporary document of King Djoser mentions an expedition to the south during his reign: the famous 'Stele of the Famine' represents only a decree of Ptolemy V Epiphanes, which, in 187 BC, mentions in pictorial form the return of the southern provinces to the crown. From the time of Sneforu (Early Fourth Dynasty) on the contrary, relations between Egypt and the south become more active: warlike raids, the exploitation of diorite quarries, and commercial expeditions along the desert lanes steering clear of the obstacles encountered in the valley. Doubtless under the Fourth Dynasty, if we accept the evidence of the Qar inscription, the role of Pepi I was of considerable importance. The frontier of Egypt remains, however, at the First Cataract. No 'march', no territorial exploitation was systematically organized south of Egypt. The deepest sallies of the Egyptians did not bring them into contact with the Negroes; their contacts were with the Hamites. The Sudan at this time enjoyed a mediocre culture, the so-called Group B culture, lasting from the Thinite period until the end of the Old Kingdom.

7. Much could of course be floated *down* the rivers, as Herodotus remarked in the case of timber; but anything going north had to be carried on pack animals.

8. Professor John A. Wilson points out that Sneferu's boats are not always called *kbnjt*; this name is attested only under the Sixth Dynasty [cf. K. Sethe, *Zeitschrift für Aegyptische Sprache*, 45 (1908–09), p. 8].

9. The importance of the Egyptian merchant marine seems somewhat underestimated by the author; see T. Säve-Söderbergh, 'The Navy of the Eighteenth Egyptian Dynasty', Uppsala Universitets *Arsskrift* (1946), 6.

10. Under the Eleventh Dynasty, the treasurer was authorized by the king to relieve the needy. Similarly, under the New Empire, the royal granaries were used to succour the poor [W. Helck, *Zur Verwaltung des Mittleren und Neuen Reichs* (1958), p. 79 and n. 6].

11. According to Professor I. M. Diakonoff, in Jamdat-Nasr times it was managed by the elders; in Fara times it was managed by the priests; towards the end of the Ur-Nanshe Dynasty the *ensi* becomes 'lord of the land' as lessor of temple land.

12. This reading has been suggested by Professor I. M. Diakonoff.

13. Professor I. M. Diakonoff is of the opinion that this was by no means exclusively a foreign practice. The Sumerian ruler of Lagash, Enkhegal—the earliest ruler known by name—already purchased land.

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CHAPTER VI

# LANGUAGES AND WRITING SYSTEMS: EDUCATION

## LANGUAGES AND WRITING SYSTEMS

THE art of writing seems to arise naturally and almost inevitably from the condition of urbanization and also to be essential to its maintenance. In no part of the world has civilization at any time advanced to any considerable height or achieved any permanence unless by the aid of writing; but just as civilization generally implies the development of city life so writing has never been introduced in any other than an urban society.

To justify so categorical a statement it is necessary to define exactly what is meant by writing; for it is evident that in primitive communities signs, symbols and pictures have been employed to which the term writing can loosely be applied. It is true that such are the material out of which writing may be evolved, but in themselves they are not writing. The quite illiterate nomad Arab of the Egyptian desert by hammering with a flint will inscribe on a convenient rock-face the *wasm*, the emblem of his tribe—the same as he brands on his camels—to show the future passers-by that a man of that tribe has been there; or he may draw, for instance, a circle with a vertical stroke above it representing the *dilu*, the leather bucket hanging from its rope, to show that he has dug there and found water, and someone else can do the like. Here a sign conveys a definite message (provided that you know the convention) but it is not really writing because it can only be used for that one message inherent in itself; you cannot add other signs to qualify or expand the message; it is an isolated sign, not one element in a system. Some of the North American Indian tribes painted or embroidered on their buffalo-skin robes elaborate pictorial records sometimes biographical, sometimes calendary, sometimes historical; the earliest known of these is the famous cloak of Pocahontas now in the Ashmolean Museum. Most of those surviving are of late date, generally of the nineteenth century, and show clearly the influence of European art; but none of them could be described as written records for the simple reason that in themselves they have no coherence and no logical significance; they are illustrations to a story and it is only if you know the story that you can make sense of the illustrations. 'Records' such as these are not to be brought into line with any kind of written record; with far more truth they can be compared with, for example, the long series of mediaeval carvings in the Chapter House of Salisbury Cathedral which illustrate the book of Genesis; an admirable and striking commentary to an exposition of

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the Old Testament delivered by a cleric to the illiterate English country-folk of the fourteenth century, they would be a complete puzzle for anyone not familiar with the Old Testament story; unintelligible individually and having no relation one to another, they would tell him nothing.

It is hardly too much to say that 'picture-writing' is a contradiction in terms; but that pictures form the basis of any writing system is indisputable. The North American Indian and the Beduin stopped short at the first stage because that was all that their manner of life required and all that their social background could evoke; the former relied upon the tribal story-teller for his history and had no need to write it, though he might enjoy hearing it to the accompaniment of a 'picture strip'; the latter was concerned at most to record a single fact for the information of others leading a life as simple and direct as his own.

So far as we know, the Sumerians were the first people to evolve a proper system of writing, and we are fortunate in that we can in their case follow the process of evolution more closely than is possible with any other people.

As soon as men came to live together in groups larger than the family groups or clans of the Neolithic period and as industry tended to be specialized, the question of personal property grew more complicated. In the old days of the family or clan the head of such a group, by the conventional rules of patriarchal life, was the sole owner of everything belonging to the group; the use of a thing might be exclusive to one or another member of the community, but regarding its ultimate ownership there could be no doubt at all. But when various groups were associated in the new unit of the town, then there could be confusion, and the claim to ownership could be called into question.[1] Something was needed to certify the right to property. Consequently we find, at the very beginning of the metal age, i.e. at the very outset of urbanized society, the engraved personal seal. The stopper of the store-jar, the knot in the cord that tied up the bundle of spare garments, was smeared with clay bearing the impression of a seal that bore the recognizable mark of the proprietor—his *wasm*. The mark bore no relation to its meaning; it might be pictorial—the drawing of a dog or a cow, in which case one may suspect but cannot prove either a nickname or some sort of play upon words—or a decorative design, or more simply, an arrangement of straight lines; what mattered was that it should be individual, that it should be unmistakably the mark of so-and-so and of no one else. Each owner of property therefore required a seal. But since in the Sumerian city state the city's god was the chief, if not the sole, lord of the land and of all its fruits, the god's temple wherein the produce of his estates was stored stood in the greatest need of all to have some distinctive mark if the god's property was to be duly safeguarded against peculation. What, then, was the mark to be? The owner was in the first place a god, a member of the hierarchy of heaven; in the second place he was an individual god bearing a special name and possessing special attributes; in the third place he was the god of the city state which, as such,

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was identified with him; it was in the last capacity that he owned the goods stored in the city's magazines. To brand his goods as simply the property of 'a god', as divine property, scarcely answered the case, and the goods were his in virtue not of his personality but of his rights of lordship. Consequently on seal-impressions of the pre-literary period which come, certainly, from temple stores, we find conventionalized pictorial symbols which can be recognized as the prototypes of those signs which in later times stood for the names of cities. The door of a building, or a tower, represents the temple which, since the god is king, is the real heart of the city; cap this with the rising sun and you have Larsa, *UD.UNU.KI*, 'the abode of the Sun'; with the evening star, and you have Uruk; with a snake, Der; the recognized symbol of the god makes the meaning of the pictogram obvious to anyone, and it was quite easy to draw.

But while the private citizen might be content with the simple mark that identified as his the household supplies stored for his use, the god's establishment was on a vastly bigger scale and required much more orderly supervision; to do their work properly the priests in charge of such wealth had to keep accounts. So it was in the temples and in the service of the god that writing began. Again, the initial stages were easy enough. You had to keep tally of the cattle and the sheep, the jars of butter and the measures of grain; a picture of a sheep, of a cow's head, of an ear of corn or of a fish followed by one or more impressed dots or circles gave you precisely the information that was needed—sheep, so many, cattle, so many, corn, so many (standard measures, not ears). That is, in fact, the character of the earliest clay tablets found in Mesopotamia, at Erech and Jamdat Nasr;[2] they are the economic records indispensable for the business of the temples. This is a stage at which man can arrive without any undue exercise of the imagination; we see just the same thing on tablets from Minoan Crete (though there, at a much later date, the system of enumeration is more elaborate) where the contents of the palace stores are listed, so many adzes, so many chariots, so many measures of saffron. Quite a number of people have got so far and then have stopped—at least they have stopped so far as their own initiative was concerned, and if they have subsequently gone on to writing properly so-called, it was because they borrowed the idea of it from others, from the Sumerians.[3]

For it must be emphasized that these temple accounts are records, not writing. The early pictograms denote things, but that is all; they cannot make statements, and they cannot convey thought. As long as the pictogram means what it says writing is impossible, for you cannot make a picture of action or time or quality or thought, or of anything but a thing;[4] you cannot put down anything that makes sense. Pictorial representation ends and true writing begins at the moment when an indubitable linguistic element first comes in, and that can only happen when signs have acquired a phonetic value. The gap which divides the pictogram from the hieroglyph and ultimately from the phonetic sign is so great that for most peoples it has proved impassable.

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It is to the credit of the Sumerians that they were able to bridge that gap, and as soon as they had done so their neighbours were quick to adopt not necessarily the Sumerian system, but the Sumerian idea, and there arose a number of scripts which differed completely in form from the Sumerian but were indebted to it for the basic conception that a written sign might represent not a thing but a sound.

All the archaeological evidence available seems to prove that true writing was first developed in southern Mesopotamia, and in view of the incalculable importance of the invention for human progress everywhere we are entitled to ask the further question, *why* was that invention made by the Sumerians rather than by any other ancient people? The answer seems to be that it was owing to the peculiar character of the Sumerian language.

The theory has been propounded that the idea of making the picture signs represent sounds instead of the objects pictured was first suggested by the existence in both the Sumerian and the Egyptian languages of 'homonyms', that is, of words having the same sound but different meanings. If we accept the theory, then we must admit that the art of writing could have been invented independently in both countries and that the apparent priority of Sumer may have been merely the result of accident or again may rest simply upon the incomplete character of the archaeological evidence at our disposal. Obviously that is a possibility that we must take into consideration.

The earliest known example quoted as illustrating this method of extending the range of pictorial signs comes on tablets found at Jamdat Nasr, a site on the Tigris, a little north of Babylon, and dated about 3300 BC. In them occurs the personal name En-lil-ti, which in Sumerian means 'Enlil [the god] causes to live'. The word-sign *TI* is the picture of an arrow, but in the spoken language the sound *ti* is a homonym, meaning both 'arrow' and 'life'; the latter would be difficult to represent pictorially and therefore, according to this theory, the scribe uses the arrow sign, which could be drawn, to mean 'life'. Similarly in Egypt we find the familiar sign representing a scarab beetle (ḫpr) transferred to the homonym ḫpr meaning 'to exist'. Now as an observation this is indisputable, and it can fairly be claimed that homonyms did at one stage help in the development of script; but the theory that they suggested the transition from the pictorial to the syllabic sign reverses the historical process, because the play upon words, *ti*, arrow, and *ti*, life, holds good only for the sounds of speech; not until the sign had come to represent a sound instead of a thing could the fact of the sound having more than one meaning affect the value of the sign.

There are homonyms in modern languages, but even when they are represented by the same signs, i.e. when their spelling as well as their pronunciation is identical, the play upon words does not suggest itself so readily as the 'homonym theory' requires; the appropriate meaning is generally so well defined by its context that no other meaning presents itself to the mind. Thus, if an English journalist or broadcasting announcer reporting a cricket match

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were to remark that 'Mr Blank carried his bat after a valuable innings', no reader or listener would ever think of the successful player as nursing a specimen of *Vespertilionidae*. But for the Sumerian that latent ambiguity simply did not exist. The modern language, starting from the sound of the spoken word and using an alphabetic system to express sounds, can make the same group of letters stand for totally different things if their names happen to be pronounced alike; but the Sumerian was working in precisely the opposite direction; he began with actual material things, not with sounds at all. It is true that in his spoken language the sound *ti* meant 'arrow' and also meant 'life', though even in the spoken language the correct meaning would be so defined by the context that the alternative was no more likely to be evoked in the hearer's mind than in the case of the English word 'bat'. But when the scribe drew upon his tablet the word-sign *ti* in the form of an arrow that sign did not mean the sound '*ti*'—it meant neither more nor less than the material arrow which he had been at pains to represent; and between that and 'life' there was no connection whatsoever. The essential thing for the development of writing is that the written sign loses its purely representational character and comes to signify a sound, and the homonym could not effect that momentous change. That being so, the mere existence of homonyms in the Egyptian language has no bearing on the problem of how and where writing was invented, and, accepting the archaeological evidence, as practically all authorities agree in doing, we have still to ask, 'Why did the Sumerians evolve their syllabary before the Egyptians learnt to write?'

Sumerian was unique amongst the languages of the ancient Middle East in being agglutinative;[5] it belonged in this respect to the same group as Chinese (though Chinese is from an analytical point of view generally classified as 'isolating') and Turkman and the later related languages, Finnish and Hungarian. Most of the root words are monosyllabic, consisting of one, or two, vocalized consonants; such would be the words invented by primitive man as the names of the things he encountered in his everyday life—incidentally, the names of things of which you could draw pictures; there are a number of dissyllabic and a very few trisyllabic words, but these may be of later formation. The Sumerian language was, by the time when we first encounter it, already so developed that the process of its growth cannot be traced; but although that growth had in many respects followed different lines, yet parallels with the similar language of China are numerous enough to justify us in making a general comparison; and since Chinese has up to the present time perpetuated many of the linguistic methods of the primitive age we may adduce it for the explanation of early Sumerian practice. Using then the analogy of China we can say that an agglutinative language, in order to express more complicated or novel meanings, selects the simple words which together suggest the required meaning and strings them together without any change or inflection; thus, the Chinese trisyllabic word for 'magnet' is merely the three monosyllabic words 'pull—iron—stone' juxta-

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posed. In a compound word of this sort each syllable is a separate word which retains just so much of its original meaning as is needed to complete that of the compound; but the meaning of the compound, i.e. that of the word-syllables in combination, is something new—not just a collection of the things named but something that results from the association of the ideas of those things. And because by the word as spoken an idea is conveyed which is related only indirectly to the various things named by the several elements composing it, one tends to pronounce the compound without thinking much about the specific meaning of its individual parts; thus, even in English, one can speak of a politician as 'a tub-thumping wire-puller' without for one instant thinking of him as thumping a tub or pulling on a wire; we are describing characteristics that have nothing to do with wires or tubs, although the metaphor was ultimately derived from such. The complete word conveys a new idea. The literal meaning of its parts becomes subordinate to their sound; it persists to the extent that it subserves the sense of the compound word, but it is not stressed beyond that; in proportion as the compound word becomes familiar in use, the elements of it lose their character as names of things and become syllables. Now if in speech you string together the names of things to make a new word, and if you have been accustomed to drawing pictograms that represent those things, then it requires no great effort of the imagination to see that by stringing together the pictograms you automatically represent the new word. The grouped signs, representing things, simply reproduce the grouped words which are the names of those things, but because they are similarly grouped the effect of their association is similar; the pictographic sign becomes syllabic because the spoken word has done so already. The drawing of a fish still means 'a fish' when used by itself, but as an element in a compound word its representational value tends to disappear in favour of the name-sound; it becomes the syllable *FISH*. When that happens the gulf between non-writing and writing has been bridged.

In the case of an agglutinative language a syllabic script results almost inevitably from the character of its root words, and because it accords with the genius of the language there is little motive for changing it; the Chinese syllabary persists to the present day, and the Sumerian was modified only by peoples of a different type of speech, for which it was ill adapted. As against an alphabetic script, the main drawback of a syllabary for general use is that it uses a vastly greater number of signs and so makes greater demands upon the powers of learning and of memory. The number of signs in the Sumerian syllabary was, in point of fact, systematically reduced. In the early tablets from Erech (and those early tablets are mostly lists of offerings in the temple accounts, so that it is not surprising that the sign for 'sheep' should occur frequently) there are no fewer than thirty-one variations of the sign *UDU* (sheep), corresponding in part, no doubt, to the many kinds and conditions of sheep used for ritual or other purposes in the temples. But in the next main level only three signs for sheep remain, and in the top stratum only two. Here,

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then is a deliberate rejection of an almost unrestricted tendency to differentiation. At one stage of the Uruk (Erech) period (Uruk IVb, *c.* 3500 BC) two thousand signs were in use; tablets found at the site of Fara of a date perhaps three hundred to four hundred years later indicate that their number had dwindled to about eight hundred. By *c.* 2900 BC another two hundred signs used in the Fara texts have disappeared.[6]

One may suspect that some of the variants for 'sheep' in the early tablets were due not so much to the variety of the animals as to the divergent efforts of different scribes to represent a sheep; but the deliberate policy of reducing the number of signs is evident. It may well be that advantage was taken of the existence of homonyms in the Sumerian language to effect further economies. If two things had names that sounded alike in speech and one of them was easy to draw and the other difficult, the fact that the sign for one of them, having already been used as a syllable in a compound word (just as the spoken word was), had acquired a phonetic value would suggest its use for the other word also. Thus in Sumerian the word *TI* means both 'arrow' and 'life'; you can make a recognizable drawing of an arrow, but 'life' you cannot draw; but as soon as your drawing of an arrow has ceased to be limited to its representational use and has come to mean the sound *TI*, then it can perfectly well mean 'life' too. Again, when once it is realized that a sign can represent a sound instead of having its meaning limited to a particular object the scribe is no longer tied down to the drawing of material things; he can invent a sign and arbitrarily assign it to a particular sonant value. Thus in the case, let us say, of an adjective, a simple monosyllable which could not be 'spelled out' by a combination of syllabic signs, a conventional sign having no pictorial basis could be adopted, or, again, the picture of an object might be transferred to the quality inherent in the object; the drawing of something essentially big might be made to mean 'big' without any reference to the thing itself or to the sound of its name, the emphasis being solely on its size. It is certainly the case that in the Sumerian syllabary adjectives such as 'great' and 'good' have signs peculiar to themselves which are not pictures of anything definable; the explanation given above is theoretical, based on analogy only, but it is not improbable.

One cannot define the stage at which the written sign was recognized as being phonetic and syllabic, and no longer necessarily pictorial and having only a specific and material connotation; the process must have been gradual and use may well have anticipated theory. But it is possible that the development of the Sumerian cursive script itself helped in some degree to effect that change in the value of the characters, or, at any rate, helped towards the recognition of the change. As with the use of the stylus on clay the sign became formalized, the original drawing first assuming a rectilinear form and finally resolving itself into a diagram composed of wedge-shaped impressions which bore no recognizable resemblance to the thing which the drawing represented, that thing would be lost sight of and the sign would be identified

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not with it but with the sound of its name; what had been 'a fish' would become *FISH*.

But while *FISH* used by itself as an ideogram would still mean 'fish' (not because the sign any longer looked like a fish but because the name of the thing was pronounced like that) it might also, owing to the existence of homonyms, mean something quite different.[7] This difficulty can be avoided by the use of an alphabet because words pronounced in the same way can be spelt in different ways, as, for example, in English we write 'mays', 'maze' and 'maize'; but with a syllabary that cannot be done. Consequently very many Sumerian signs were polyphones, capable of being read with two or more totally different meanings. In English, of course, there is the same difficulty, when 'bat' may mean either an implement for a game or an animal, and the reader must judge from the context which is intended. The Sumerian had another system. In the first place, he used determinatives—the ambiguous word might be introduced, in the written document, by a sign which was not meant to be pronounced but gave the necessary clue for the pronunciation of the word, or, at any rate, for its meaning. Thus the sign for 'plough' might have as a prefix the sign for 'wood' or that for 'man'; the determinative informed the reader whether he was to read the word as 'plough' or as 'ploughman'; the system is virtually that of the Chinese[8] where signs or 'radicals' indicating 'money', 'water', 'foot', 'food', etc., are added to a phonetic sign such as *chien* to indicate 'the *chien* associated with money', i.e. 'mean', 'cheap'; 'the *chien* associated with foot', i.e. 'to tread'; 'the *chien* associated with water', i.e. 'to splash'; 'the *chien* associated with food', i.e. 'a parting gift of food', etc. Again, to avoid ambiguity two simple words are attached together, each of which may have several meanings but of those several only one is common to both words, so that the duplication of that one idea leaves no doubt as to the sense. Thus, modern Chinese has over a hundred different words all pronounced *i*, one of them being 'meaning' or 'thought'; used by itself it would be hopelessly ambiguous; another word, *ssu*, having the meanings 'servant', 'private', 'meaning', 'thought', 'control', etc., is almost equally confusing; the Chinese therefore puts the two together—*i—ssu*, and the only signification common to the two, i.e. 'meaning' or 'thought', is inevitably the right one. In much the same way with the Sumerian polyphone signs a word may be formed with two or three of these, each of which may have two or three values; but in the Sumerian language only certain sound-combinations are possible, and so most of the apparently alternative readings of the compound word would be instinctively rejected by the reader and he would without hesitation pronounce the word correctly. For the modern scholar, groping towards an understanding of the language, this is a stumbling-block, and he may long hesitate as to whether the Third Dynasty king should be called Dun-gi or Shul-gi; but for the Sumerian it was plain sailing. In the second place the Sumerian, having identified his signs with syllables, could employ them as phonetic complements and by so doing change the value of

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the sign to which they were attached. The stem-word *DU*, which was originally a drawing of, and meant, a human foot, was obviously one which should be combined with other words to render such abstract concepts as 'walking', 'standing', etc., and that regardless of the pronunciation of the words for such concepts; thus, *gin* meaning 'to go' and *gin-na* 'going', greater clarity could be got by combining the 'foot' sign with *gin* and 'going' would be written *DU-na*; but the reader, being warned by the *na* suffix, would recognize *DU* as being a mute determinative introducing '*gin*' and would pronounce the word as '*gin-na*'. To most people this may seem an uncalled-for complication, but since it is parallelled by the synonym-compounds of Chinese we must conclude that it arises naturally from the idiosyncrasies of an agglutinative language.

In the early part of the third millennium BC the Sumerian system of writing consisted of a syllabary containing some five hundred to six hundred signs. Most of these still served as ideograms, fulfilling exactly the part played by the original pictures. However necessary syllabic signs might be, the need for them was limited, because in the agglutinative language of the Sumerians the words, mostly monosyllabic, were inflected not by any internal change but by the addition of prefixed or suffixed syllables, and comparatively few signs with syllabic values were enough to fulfil this purpose and to represent phonetically such awkward words as could not be represented pictorially. When, however, the Babylonians took over the Sumerian script they were obliged to develop further the syllabic system because their inflective language could be expressed only by the help of phonetic signs; an ideogram could indeed be used by itself as a sort of shorthand character, uninflected, but otherwise they were compelled to spell out each word syllable by syllable. The basis of the Sumerian system of writing had been word-values, that of the Akkadian was syllable-values.

This mixed use increased the complication of the script. In the course of time every sign became a polyphone, representing completely different sounds, so that the employment of ideographic signs as determinatives was essential; where the polyphones were used syllabically their pronunciations would be decided, as we have seen, by the values of the other signs with which they were associated in each case. Again, many sounds could be represented by totally different signs. Thus, *DU* could be represented in twenty-three different ways, i.e. by twenty-three different pictures of things whose names happened to be similar; $DU_1$ is a human foot, $DU_6$ is a hill or mound, $DU_7$ 'to gore', is a butting ox, $DU_{11}$ 'to speak', is a man's head with the mouth specially marked, $DU_{12}$ 'to play a stringed instrument' apparently figures a plectrum, and so on; as pictograms such are unequivocal, but when they become phonetic syllables all having, necessarily, similar values, they tend to be used indiscriminately for one and the same sound. But those sounds are always syllabic. None of the signs represents a single consonant; all are at least biliterate, consisting of at least one consonant plus a vowel, and many

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have two or sometimes even three consonants, and for that reason they were not likely to lead up to an alphabetical system. Involved and clumsy as this method of writing must appear to people accustomed to an alphabet, it suited the peculiar genius of the Sumerian language and so far accommodated itself to the Akkadian that apart from the development of the actual script it remained radically unchanged from its first invention to the close of the Late Babylonian period, 2,500 years later. Even the script altered but little, and the original modification was due entirely to the medium employed, not to any will to improvement. The first sketches executed with a sharp point on clay were inevitably simplified and conventionalized; because on damp clay it is easier to impress marks than to draw them, the triangular-ended stylus replaced the point, and the design was modified automatically. In the case of inscriptions cut in stone the rectilinear signs which first developed from the old pictures persisted longer; for the stone-cutter they were very easy to do, and the stone-cutter is a leisured and therefore a conservative craftsman. The ordinary scribe, writing as he always did upon a clay tablet and overburdened with accounts, wanted something in the nature of shorthand; a deft handling of the stylus produced the wedge-shaped impression and the signs—their pictorial origin completely lost in the formalized script—could be written quickly and almost mechanically. After that there was no need for further change; even for inscriptions on stone the cuneiform script soon became the norm, and so far as the writing of Sumerian was concerned finality had been reached.

If the genesis of the art of writing can be traced back to the peculiarity of the Sumerian language its stereotyping must be attributed to the character of the people and therefore to the use that they made of the art. It had been developed in the temples by the scribes who needed a convenient instrument for the keeping of the elaborate accounts of the revenues of the god, and in a society which was essentially industrial and commercial the main function of writing was the furtherance of business. From the ruins of the Mesopotamian cities a great bulk of 'literary' material has been recovered, and it can be roughly classified into three categories, business documents, royal inscriptions and religious texts; but it is to the first category that the vast majority of the tablets belong.

The business tablets, which include contracts, letters, deeds of sale, etc., as well as mere inventories, answer to purely practical ends; not only was the script fully qualified to deal with matters of the sort but the scribe had no inducement to improve upon or to beautify its character; it was a utilitarian instrument with which aesthetics had nothing to do. It might have been thought that royal inscriptions would call for something more decorative or more monumental than the shopkeeper's shorthand; but in Sumer such was not the case. It was very seldom that a written text formed the major part of a royal monument; for a public largely illiterate a picture was more impressive than any writing, and on Eannatum's 'Stele of the Vultures' (Pl. 18, a) or on

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a limestone plaque of Ur-Nina (the name is also read as Ur-Nanshe) the sculptured figures made the direct appeal and the written text added for the benefit of the few is relegated to the background. But the bulk of the royal inscriptions were not intended even for the literate few; they were meant for the eyes of the god. The king's statue stood in the temple to represent the king as perpetually a worshipper in the god's presence, and the inscription (generally recounting the ruler's pious services) was a perpetual reminder of his deserts; it was not at all an advertisement to the public, and in fact only a few priests would ever see it. But most of the royal inscriptions—Gudea's long-winded cylinders, the clay cones of Ur-Nammu, Rim-Sin or Kudur-Mabug—were never seen by anyone; they were immured in the brickwork of the temples built by the kings and were meant for no eyes but those of the god. Clearly such texts had to be well written, good examples of the calligraphy of the time, but they were in the nature of private records and did not call for monumental treatment; they had no effect on the script in normal use.

Documents of our third category are almost without exception of relatively late date. So far as one can tell from the tablets that have been preserved, the priests of early times were (as is indeed natural with members of an exclusive guild) content with oral tradition. It is possible that a few hymns and liturgies were committed to writing in early days, as is perhaps suggested even by some of the Uruk tablets, but for the most part they were learned by heart. It was only when the Semitic north had gained the ascendancy, and Sumerian as a spoken language was dying out, that the Sumerian priests set themselves to perpetuate in writing the religious literature of the old civilization and what they could of its history; for the former, memory had obviously served them very well, but as regards historical detail the confusion in the King Lists shows how little had hitherto been written. This belated salving of the ancient formulae was a purely practical measure, providing no motive for the modification of the old script; on the contrary, just because it was conservative in spirit it would be the more inclined to cling faithfully to the old conventions. So it was that having elaborated a system adequate to their needs and suited to their language, the Sumerians, using the system for utilitarian ends such as had prompted its invention, felt no need to modify or diversify the form of their writing any more than to tamper with its syllabic character.

At the time when writing began Sumer was by no means an isolated country but was itself expanding widely and also was in touch through trade with neighbours on the east and on the west. Just because the invention was a utilitarian one adopted for commercial and economic purposes it was bound to come to the notice of and to appeal to the foreign countries which had trade relations with Sumer and had themselves reached a stage of culture at which writing would serve a useful purpose. It was not likely that such people should simply take over the Sumerian syllabary, which would have been ill-adapted to their different languages, but they could, and did, learn that a

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picture, representing a thing, could on the new recognized principle of phonetization stand for the sound of the thing's name.

Accordingly, it is in the Jamdat Nasr period, at the time when the phonetization of the Sumerian pictographic script was in progress, that the Proto-Elamite writing makes its appearance in Iran. Since the documents in this script are relatively few in number and are still illegible, little can be said about it; but the tablets are clearly of a commercial or economic and not of a literary type; the characters, which are semi-pictographic, are not taken over from the Sumerian, so that to that extent the system was original. But the two countries were too closely in touch for a distinctive writing to have much chance of survival. Already in the pre-Sargonid Age Elamite rulers were using the Sumerian script and even the Sumerian language, and after the Sargonid conquest of Elam the local script seems to have fallen altogether into abeyance. It was indeed resuscitated in the twelfth and thirteenth centuries BC as part of a nationalistic revival, but soon vanished again as a result of the conquest of the country by Babylon. From the point of view of man's cultural progress the chief interest of the Proto-Elamite syllabary lies in the fact that it supplies definite evidence of the dispersion of the ideas originating in Sumer and illustrates the readiness with which, at this stage of history, countries would take advantage of their neighbour's inventions.

Because Elam was an immediate neighbour of the Sumerians and from the earliest times connected with them by cultural and political ties (the latter are best illustrated by the legend of Enmerkar and the Lord of Aratta, recording events of the Uruk period) such cultural exchanges are natural enough; but Sumerian trade extended much farther afield, so that even in the case of remote countries the possibility of indirect Sumerian influence has to be borne in mind.

The earliest examples of the Indus valley script that have yet been found date to about the twenty-fourth century BC. At that time the system appears to be fully developed, the characters are uniformly stylized, and there is nothing to throw light upon their genesis. But in the twenty-fourth century BC the Harappā people were in direct contact with Mesopotamia, as is proved by the finding of numerous seals of the Harappā type on Mesopotamian sites, and the contacts would seem to go back to a far greater antiquity; that India owed its art of writing to the Sumerians cannot be proved, but it is highly probable. Just as, at a much later time, the Aryans of northern India were to find inspiration for the development of their own Brahmi script in the Aramaic writing evolved by the peoples of the Syrian coast, now the traders of the Indus valley must have turned to their own uses the invention which traffic with Mesopotamia brought to their notice. What was borrowed, here as in the case of Egypt, was not the form but the idea of writing.

Granted that there may be resemblances between some of the characters in the different scripts, such did not constitute a valid argument; the characters being originally pictograms would have represented the ordinary things

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of life, which would be more or less the same everywhere, and the drawings of those things done by the scribes of different countries would bear a certain family likeness; but the sound values of the similar signs would be determined by the names of the things in different languages and would be therefore entirely unrelated one to another. Since the Harappā texts at present known are all very short inscriptions on personal seals, probably giving the names of individuals, and since we know nothing about the language in which they are written it is impossible to establish any definite connection between them and any other script, but the existence of the texts is of the greatest interest as witnessing to the probability of the eastward spread of the invention of writing.

The dependence of the Chinese script upon the Sumerian has been urged by some scholars and by others rejected altogether. In view of the basically similar character of the two languages[9] all the arguments that have been adduced to prove that of the peoples of the Middle East the Sumerians alone could have invented a syllabic script would apply equally to the Chinese; it is therefore impossible to deny, *a priori*, the independence of the Chinese invention, but, because no documents exist which illustrate, as do the Warka and Jamdat Nasr tablets in the case of Sumer, the successive stages in the development of Chinese writing, it is equally impossible to assert it. The supporters of Chinese independence have relied chiefly on the argument that the date of the earliest known Chinese inscriptions is too recent to allow of any connections with Sumer, for the idea of a syllabic script based on pictographic characters could have been borrowed only at a time when the pictorial nature of the signs in the parent script was still recognizable. It is true that the bone and tortoise-shell texts from Honan are not earlier than the Shang-Yin Dynasty (*c.* 1766–1122 BC), but it is also true that the script on them is well developed and executed with much elegance and technical skill, implying considerable previous experience in writing; moreover, it is thought that a historical document of which a copy is preserved in the Confucian classics ('Yao's Calendar', included in the Canon of Documents, Shu Ching) can on astronomical grounds be dated to the twenty-fourth century BC,[10] in which case it would seem to prove that already at that time the Chinese were skilled astronomers and had formed the habit of recording memorable events in writing. If that be so, the time gap becomes almost negligible; and while we may admit that two peoples of similar speech might independently effect the transition from the purely pictographic to the syllabic script, that they should have done so at more or less the same time does involve an unlikely coincidence. On the whole it is more probable that the Chinese, like the people of Harappā, derived from Sumer the principle of writing.

Chinese being fundamentally a monosyllabic language[11] the characters of its script, originally of course pictographic, are necessarily syllabic; and that a syllabic script is the most fitting vehicle for such a language is proved by the fact that in China it has never been abandoned; the pronunciation of the

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words has, in the lapse of many centuries, changed beyond recognition, but the written characters have retained their form, subject only to calligraphic modifications—the purely formal character of today can always be traced back to its pictorial origin.

If it be the case that the Chinese did not independently invent the art of writing but borrowed the idea of it from Mesopotamia, then they must have done so in the relatively early days when the characters of the Mesopotamian script were still so unconventionalized as to be recognizable pictures of things; only at that stage would they suggest to a foreign people the possibility of using similar pictures for their own language. There is nothing in Chinese writing that resembles in any way the perfected cuneiform script, and the modification undergone by the pictograms followed a very different course. The Sumerian invented writing for the purposes of accountancy and developed it for the use of the temple and the warehouse. He was a practically minded man with few literary interests; even the hymns used in the temple services, which had to be preserved exactly in their traditional form and therefore were best entrusted to writing, were not written down until the end of the third millennium but before that time in business of every sort the witness of the written tablet was preferable to the spoken word; he required, and developed, a script which could be written quickly, was as uniform as possible and was unambiguous; the more mechanical it was, the better. For the Chinese, on the contrary, writing was, from the outset, inseparable from literature; it was the implement for the composition and perpetuation of works of art, and therefore it partook of the nature of a work of art. Because he used a brush and silk (or bamboo) instead of a stylus and a clay tablet the Chinese scribe was bound to conventionalize his script otherwise than did the Sumerian, but his mental attitude rather than his medium decided the lines along which Chinese script was to develop. Calligraphy was on a par with painting. In the course of centuries the characters of the script have been radically transformed, but always with an eye to the aesthetic effect, and their functional value has remained unaltered. That this should be so results naturally from the character of the Chinese language. The languages of most civilized peoples show a more or less marked tendency to simplification, e.g. by dropping of moods and persons from the paradigm of verbs, the substitution of particles for inflected case-forms of nouns and the elimination of gender from adjectives; the process is a gradual one and very far from uniform in different countries. In China it appears to have been precociously rapid, for the relative absence of grammar from the Chinese language is a mark not of primitive simplicity but of development carried to its logical extreme. In the earliest texts there survive inflective case-forms for the personal pronouns, but such have long since disappeared and the Chinese 'sentence' resolves itself into a collocation of monosyllabic words whose relation to the sentence and to one another is expressed not by any marks in the words themselves but, in the first place, by a fixed word-order and, in the

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(a)

D.A.E.]

(b)

[D.A.E.

31

(a) *Wooden relief of Hesire*

(b) *Palette of Narmer*

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[H.M.

32 *The Phaestos Disk*

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second place, by the addition of words the original concrete sense of which is so far faded that they can be used for formal purposes somewhat like the auxiliaries of modern Indo-European languages. Where all stem words are monosyllabic and are never elaborated into disyllables by derivative affixes or varied by inflection, and where abstract ideas are expressed in speech by compound words of which each syllable is a separate and recognizable stem word, there a writing system composed exclusively of originally pictorial syllabic signs meets all the requirements of language and calls for no revolutionary change. No such change has affected the Chinese script in the course of millennia; probably none would have affected the cuneiform of Mesopotamia had its use been confined to the Sumerian inventors of it; it was only when that script was adopted by peoples speaking languages of an entirely different type that difficulties of expression arose which led first to the modification and finally to the extinction of the Sumerian syllabary.

Before we deal with those adaptations of cuneiform which marked the later phases in the history of Mesopotamia and its neighbours we should examine that other great system of writing which characterizes the civilization of the Nile valley.

It is not possible to trace the development of writing in Egypt with the same detail as in Sumer, following up each successive phase in the advance from primitive picture-making to the full elaboration of the syllabic script; the simple but sufficient reason for this is that the Egyptians took over the principle of writing ready-made from the Sumerians[12] and so were able to achieve in a very short space of time and with the minimum of experiment results which the inventors of the principle had evolved slowly and painfully.

Had they been left to themselves the Egyptians could hardly have evolved any such syllabic system of writing as they actually employed. Their language was not, like the Sumerian, agglutinative, so that compound and abstract words were not built up by the simple collocation of one-syllabled words retaining in combination their original form; the great majority of their verbal roots contained either two or three consonants, and from the latter at least 'syllables' could be got only by a process of analysis wholly foreign to the primitive mind. The transition from the meaning denoted by a pictorial sign to the sound of its spoken name, which is the essential step in the development of writing, is not really in keeping with the character of the language and would not have suggested itself to the Egyptian mind unless prompted by a foreign example proving its feasibility.

By a fortunate coincidence the monuments which illustrate the beginnings of Egyptian writing also leave us in no doubt regarding the source of the scribes' inspiration. The magnificent votive palettes carved in slate which were found at Hierakonpolis must be assigned to the later pre-dynastic period and to the earliest years of the First Dynasty and are therefore contemporary with the latter part of the Jamdat Nasr period in Sumer, the period which saw the birth—or at least the early growth—of writing in that country. The



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carvings on these royal palettes prove more manifestly than any other Egyptian works of art the strong cultural influence which at this time Sumer exercised at any rate upon the upper class of society in the Nile valley; and where the motives and the style of stone carving could be passed on from one country to the other it was inevitable that Pharaoh's court should learn also of the Sumerian invention of writing and should be quick to adopt it. It is not to be supposed that the inscriptions on the slate palettes are actually the earliest ever written by Egyptian scribes, but they do come so early in the course of hieroglyphic history that they combine in themselves most of the stages of that history.

On the palette of Narmer (Pl. 31, b) the greater part of the field is taken up by a dramatic picture of the king gripping a vanquished enemy by the hair and about to brain him with a mace, while others of the enemy are in flight beneath his feet. This, of course, is simply a picture which anybody could understand; the towering Pharaoh with his royal crown is unmistakable, and equally obvious are the naked enemies with their outlandish beards. But the group in the top right-hand corner of the palette is very different. Here a hawk, familiar as the symbol of the god Horus, is perched upon a cluster of six papyrus stems and with a (human) hand grasps a cord which is passed through the nose of a severed bearded man's head projecting from the oblong whence rise the papyrus stems. The Horus hawk and the bearded foreigner are self-explanatory; they are quite definitely pictures, and it required no stretch of the imagination to understand the further point, that the hawk has taken the man prisoner. But the other signs are not merely pictorial, they are hieroglyphics. The oval is an ideogram—a word-sign—meaning *ta*, 'country', which reappears in early texts; the papyrus growing out of it is the symbol of the delta, of which it is the characteristic plant, and the combination of the group with the man's head gives it a syntactical value; while finally a wavy line joining the head to the arm of the king completes what is as good a sentence as was possible for the scribes of the beginning of the First Dynasty, though not yet a true sentence seeing that it is intermediate between pictorial representation and linguistic expression. It is intended to read, 'Horus brings to Pharaoh the foreign captives from the land of Lower Egypt'. It is further possible that in this early period the papyrus might be used as the lotus was regularly used afterwards for '1,000', as on the Kha'sekhem statues from Hierakonpolis, in which case we should read 'six thousand foreign captives'.

But at the top of the palette there is carved another group of signs; enclosed within the square frame which throughout history was to be the cartouche of the Horus name of a Pharaoh are the two signs (a fish and a chisel?) which, as giving the king's name, must clearly be not pictorial but phonetic—possibly their small size hints at their being recognized as such.

On this single monument, therefore, there appear simultaneously three stages in the development of writing, but, it should be remarked, not the final stage. The palette inscriptions are still no more than logography, the words

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uninflected and simply strung together, so that the grammatical construction of the 'sentence' is suggested only by the visual effect made by the signs and their arrangement. But the phoneticization of the signs gives them almost automatically a syllabic value, and with that the next step, that of writing down a word by its sound regardless of the original meaning of the signs, is not difficult. The period of transition did indeed produce documents whose interpretation is very doubtful, but in a short time, probably to be measured by three or four generations, the Egyptian scribes had perfected a system which in principle remained unchanged to the end of the history of Egyptian writing.

In the fully developed script there are three classes of signs: ideograms where the meaning of the original pictograph is retained, phonetic signs and determinatives. To this extent the system reproduces that of Sumer, and the Sumerian script had just reached this stage when the Egyptian started. But although there are some striking similarities between the two scripts the differences are equally marked, e.g. the Sumerian generally placed its generic determinatives before the more specific sign whereas the Egyptian placed them after; and again in Sumerian the determinative is not essential, not even usual, whereas in Egyptian it is a necessary and very important element of the system. One must indeed emphasize the fact that the scribes who developed the Egyptian script did not copy the Sumerian system; they took over from it the main idea, that a written sign could have a phonetic value, and also the threefold distinction of signs; but for the rest they were guided by the character of their own language.

The definition commonly given of the Egyptian phonetic signs as being syllabic and therefore on the same footing as the phonetic signs in Sumerian is not strictly correct. Of the Egyptian signs about two dozen contain one (initial) consonant and about eighty contain two consonants; they are necessarily vocalized, but they are not really syllabic because (1) there is no stability in the accompanying vowel sounds, (2) there may be no vowel between the two consonants, one of them being in one syllable and the second in another syllable, and (3) the uni-consonantal signs often had a purely alphabetic function. Thus, , transliterated *mn*, might stand for *man*, *men*, *mon*, *mun*, *mana*, *menu*, etc., indefinitely; it can be divided as in *em-naf*; and in the latter word we see used as a phonetic complement of and possessed of a purely alphabetic character. Obviously the script as a whole cannot be called alphabetic, since the vast majority of the signs are biconsonantal and since too there are no signs for vowels; but neither is it properly syllabic, and the fact is of the utmost importance, because although the Egyptians themselves preserved to the end the mixed character of the script elaborated by their earliest scribes it was their alphabetic use of certain signs that led to the development in other hands of a real alphabet.

As regards the history of that script, it is characteristic of Egypt that the

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Hierakonpolis palettes which illustrate the early stages of hieroglyphic writing should be royal monuments. The Sumerians had evolved the principle of writing as an instrument of accountancy; the Egyptians adopted the principle for different purposes.[13] They needed to keep a trustworthy calendar so that they could have advance notice of the annual Nile flood, and they needed to give permanent form to those magic spells which ensured a good harvest and the not less necessary spells which secured a man's passage to the next world, such spells as we have in the Pyramid Texts. Further, writing was calculated to enhance (as in the case of the slate palettes) the glorification of kings. The inscriptions with which a Pharaoh would overlay the walls of a temple were not hidden away where only a god could see them; they were meant to impress the world at large. Consequently they should be decorative and, since most people were illiterate, more or less pictorial; even those who could not read them would be more struck by rows of pictures—many of them identifiable—than by meaningless signs. The purpose of the hieroglyphic script was largely monumental, and for that reason its elaborate pictorial signs preserved their character throughout, so that between the writing of the First Dynasty and that of Ptolomaic times the difference is really very small. But the hieroglyphic script was clearly ill suited to practical uses, and something more cursive was required to supplement it; accordingly the hieratic script—really a sort of shorthand—was introduced and displaced the hieroglyphic for everyday purposes. This script appears fully developed as early as the fourth Pharaoh of the First Dynasty (incidentally the fact that it came into use almost simultaneously with the more representational script from which it was derived gives strong support to the view that the principle of writing was borrowed ready-made from abroad); it was written with a brush or with a reed pen, primarily on papyrus, often on potsherds or flat slivers of limestone, and the materials employed would naturally conduce to a cursive rendering of the characters. In the early periods few people outside the priestly orders would have been literate, and the main use of writing was for religious purposes, e.g. for incantations, magical formulae and such funereal texts as the extracts from the Book of the Dead; but in the course of time the art was more widely diffused and its subject-matter was vastly extended. About the eighth century BC a still more rapid form of writing—the demotic—was introduced; but in neither cursive script was there any basic modification of the structure of Egyptian writing as it was first formulated in the hieroglyphic.

That the system endured for so long with relatively so little change might be taken to mean that it was peculiarly suited to the genius of the Egyptian language. Actually it was an extremely clumsy and difficult medium. So far from its being simplified as time went on, the need to clarify expression and to avoid ambiguities of meaning led to an even greater complication, more and more signs being inserted as determinatives or phonetic complements; only the astonishingly static character of Egyptian culture in general and the

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conservative influence of religion would seem to account for the retention of an instrument so unhandy. But its retention was of real importance for the history of writing in general. It was not to be expected that any other nation should adopt in its entirety so difficult a system, and in fact none did; but because it preserved the primitive pictographic form out of which writing proper had been developed the Egyptian hieroglyphic script was able to suggest to peoples of a different speech the way in which they could fashion a script of their own, as the formalized cuneiform of Mesopotamia could never have done; the Cretan and the Hittite hieroglyphic scripts were directly inspired by Egypt,[14] not by Sumer.

In western Asia the genesis of writing had been due to temple business; its further history was to be decided very largely by politics. At the very beginning of the literate age war and trade together resulted in a remarkable extension of the Sumerian civilization. Not only did their immediate neighbours to the north fall under the domination of the Sumerians, but with the establishment of such outlying city states as Mari on the middle Euphrates and, later, Harran in the north and Qatna in the centre of Syria the cultural influence of the Mesopotamian people was able to take root far afield. Their culture was indeed so obviously superior to anything that surrounding peoples could boast that the latter were prepared and eager to make it their own; great leaders such as Sargon of Akkad and afterwards Hammurabi of Babylon, Semitic though they were by race, were so thoroughly imbued with the civilized traditions of the south that their accession to power affected that civilization curiously little. In Hammurabi's time the Sumerians were dying out as a people, and even the old language was being rapidly supplanted by the Semitic speech of Babylon; but the Babylonians were content to take over the Sumerian script—incidentally the vehicle for those religious beliefs and practices which also they had readily assimilated—and to adapt it with the minimum of change to the needs of their own language; it was not particularly well suited to the Babylonian and Assyrian dialects, but these two Semitic peoples never showed any great literary originality and that fact, together with their veneration for what was almost a sacred formula, induced them to disregard its inconvenience. The Sumerian language, increasingly ill-understood, survived only in the ritual of the temple services, but the Sumerian script in the hands of the Semitic conquerors had a use more widespread than ever.

It is probably true to say that the Akkadian cuneiform system was, at the time, the best and most accurate vehicle for conveying thought in writing, and long continued to be so; its disadvantage was that the number of signs used was great, that an intricate system of ideographs and syllabic signs had to be grasped, and that the phonetic value of individual signs had to be gathered from their context. When this had been understood, the literate Assyrian or Babylonian had at his disposal a very subtle instrument for the expression of his thought—but it needed many years of study for him to

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become literate; and for anyone using a different language the difficulty was greater. When the Phoenicians invented their alphabetic script its main advantage was that its signs could so easily be committed to memory and were unambiguous, so that a man could become literate in a matter of weeks.

Under the influence of cultural proximity and trade the Hurri had already adopted the Babylonian cuneiform system, but for the most part were content to write in it in the Akkadian dialect for which it was the recognized vehicle; as far to the west as Alalakh all business was transacted in documents which might just as well have originated in some city of the lower Euphrates. Thanks to the establishment of trading colonies Mesopotamia had from very early times exercised the main cultural influence over eastern Syria, and when that was interrupted by the invasions of the Pharaohs of the Twelfth Dynasty the Mesopotamian sovereigns had to make good the balance both by wars of conquest and by diplomatic intrigue; contact therefore was close, and communications were kept open by regular correspondence. It was in this way that the Babylonian language written in the cuneiform script became the recognized diplomatic language of the Middle East. Even the Pharaoh of Egypt had to correspond with his satellites, the princes of Syria, not in Egyptian hieroglyphic but in cuneiform, and the foreign chancellery of Hattusas had to observe the same custom. The Hittites, indeed, having learnt the Babylonian system originally through the Hurri, who acted as middlemen between the two countries, made cuneiform the normal script even for their own archives. It was not at all a convenient medium for an Indo-European language such as the Nesite dialect of Hattusas and had to be modified accordingly; the Hittites retained all the characteristic elements of the Akkadian, the ideograms, the syllabic signs, the determinatives and the phonetic complements; but they cut down the number of the syllabic signs to about 130, and they incorporated in their text not only Akkadian ideograms (which would be read as Hittite words having the same meaning) but also Akkadian spelt-out words or phrases which were reproduced in their original spelling but were meant to be pronounced as the equivalent in Hittite; for example, the two signs *id-din*, Akkadian for 'he gave', might be used to denote the Hittite *pesta*, 'he gave'. The decipherment of the Hittite tablets found at Boğazköy was made relatively easy for the modern scholar by the presence of so many 'allograms', Akkadian quotations, as it were, scattered throughout the Hittite text.

From north Syria, then, through Damascus and up into Anatolia the cuneiform script was current in the second millennium BC.

It was this wide expansion that gave rise to new invention. A number of peoples were forced to recognize the utility of writing,[15] but the system, or rather the systems, in vogue were ill-adapted to the requirements of their respective languages and might be considered to have the further disadvantage of implying subjection to a foreign and perhaps hostile civilization. The

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Hittite monarch, like the Pharaoh, might not object to the use of Akkadian in his government offices, but it was at least invidious that royal monuments set up for the edification of his subjects and the celebration of his majesty should be inscribed in characters of a very utilitarian appearance, unintelligible to the public at large but bearing only too clear witness to the cultural superiority of his Assyrian rival. The Pharaonic monuments gave just the effect desired, but the Egyptian hieroglyphic system was impossibly difficult—the attempts of Egyptian scribes to transliterate foreign proper names showed how difficult; but at least its pictorial signs suggested, as the conventionalized cuneiform could not do, the right way to approach the problem. Accordingly, the Hittites invented a hieroglyphic system of their own; the idea seems to have been borrowed but the signs were in no case copied from the Egyptian—the whole point was that they should be purely Hittite. The system itself was based upon the already familiar structure of the cuneiform; of rather more than two hundred signs fifty-six are phonetic, i.e. syllabic, and the rest are ideograms; the syllables begin with a consonant and end in a vowel, but whereas the consonantal value is fixed, the vowel sound is variable; certain syntactical devices are introduced, diacritical marks, for the proper rendering of the grammatical construction of a sentence. There were two forms of the script simultaneously in use, the full hieroglyphic sculptured on stone in relief and a more cursive type which was incised on monuments of less importance and was occasionally used for fugitive writings on potsherds, etc.; the former admirably fulfilled its function as a decorative element on the walls of palace or temple. Apart from its content, which does not concern us here, the chief interest of the Hittite script lies in the fact that it illustrates the impetus that was given by the spread of the practice of writing and the recognition of its usefulness to the imagination of peoples for whose languages the existing scripts were inept. The Hittite hieroglyphic system fell out of use at the end of the seventh century BC, when the last of the Syro-Hittite kingdoms was destroyed, and was replaced by Aramaic or Phoenician; to the later history of writing it contributed nothing, but that it should even have arisen was an indication of progress.

Very similar was the case of Crete. There, soon after 2000 BC, there appear pictographic signs which in the first half of the second millennium combine into a definite system of writing ('Hieroglyphic B') and between 1900 and 1700 BC comes a cursive form, 'Linear A', to be followed in the fifteenth century by 'Linear B'. That the three scripts represent three stages in the development of a single system seems to be shown by the fact that nearly a third of the phonetic signs of Linear B are directly derived from the hieroglyphys; but this does not warrant the assumption that the language is in all cases the same. It is now generally accepted that the language of Linear B is an early form of Greek, spoken by the Mycenaeans who perhaps as early as 1460 BC occupied Knossos and eventually overthrew the Minoan kingdom; they adopted the Minoan script for their own purposes, but whether the language for which

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that script had been invented was also related to Greek cannot as yet be decided.

Most if not all of the tablets hitherto discovered are inventories of stores kept in the palace, or accounts; they are not therefore particularly informative. The signs include numerous ideograms, which are introduced by names, words or sentences written phonetically; there are about eighty-five different phonetic signs which are without question syllabic. Nearly all of them are composed of a single consonant allied to a vowel, and the vowel is not variable but is as important as the consonant in so much as different signs denote the different vocalization of each consonant, and there are also separate signs for the simple vowels; since inflections show the gender, case and number of nouns and adjectives and the person, number and tense of verbs the system is more fully elaborated than would seem to be necessary for the mere keeping of accounts; it was quite adequate for literary purposes and may have been so employed. One need not hesitate to assert that the Cretans borrowed from the older civilization of the Asiatic mainland the principle of a syllabary; the Mycenaeans could not go altogether beyond that principle, but they did simplify and improve upon it so as to make it a better vehicle for their own language than anything that had been devised in Asia. Their invention was short-lived in the sense that after 1200 BC the Mycenaean world ceased to exist, and the script disappeared together with their other arts; but the Linear B writing presaged the achievements of the later Greek stock.

Closely connected with the Minoan, at least in the form of its signs, is a Bronze Age script used in Cyprus. About one hundred inscriptions are known, all incised on clay vessels or ostraka, and they give sixty-three different signs together with signs for numbers. The script, originally devised for a non-Greek language, was later adapted by the Cypriots for the writing of Greek, for which it was ill-suited. The characters are syllabic, each consisting of a consonant followed by a vowel. The use of the script seems to have been confined to the island, and although continued into Classical times did not in any way influence the development of writing in general.

Most remarkable both for its character and for its implications is the object of baked clay known as the Phaestos Disk (Pl. 32). Found by the Italian excavators of Phaestos in conditions which proved it to be contemporary with Minoan writing of the class Linear A, it has nothing to do with that writing, nor has it necessarily anything to do with Crete; a certain resemblance has been remarked between the script on the disk and that on some ex-votos found in the Arkalochori cave in central Crete, but even if the analogy holds good it can be urged that ex-votos may be dedicated by foreign visitors to a shrine as well as by local worshippers. Sir Arthur Evans[16] has adduced evidence showing that its most likely place of origin is in south-western Anatolia, but up to the present nothing in any way resembling it has been found there.

Each face of the flat disk is marked by means of an incised line with a spiral

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along which runs the text of the inscription, starting at the outer edge and finishing at the centre; vertical incised lines divide the signs into word-groups. There are 242 signs, giving forty-five different characters, all of a very detailed pictorial sort, so much so that men and women and even different racial types of men are distinguished, and these are not incised but stamped by means of separate punches pressed into the soft clay; the disk is, in fact, printed with movable type.

Nobody would go to the trouble of making a complete fount of type for the sake of printing a single document; such is necessary only for production on a considerable scale. Although the Phaestos Disk, in its exotic surroundings, remains a unique document, we can only assume that it is one of a large class awaiting discovery in the country of its origin. Moreover, the text of the inscription is clearly continuous and contains no number signs: presumably, therefore, it does not deal with lists and accounts, as do the Minoan tablets, but is rather of a literary nature.

While the number of the signs, and their grouping, makes it certain that they form a syllabary either of the Aegean or of the Hittite type, no attempt at the decipherment of an isolated document is possible and the content of the inscription must remain an enigma. But at least we may be sure that any survey of Middle East writing made now is incomplete in that it must omit one area wherein a hieroglyphic script was freely employed for literary ends.

A number of documents, in many cases too isolated, too short or too fragmentary to be very informative, prove that about the middle of the second millennium BC various peoples on the Asiatic mainland were attempting to work out new forms of writing. The authors of such attempts were for the most part western Semites who, in contact with either Egypt or Mesopotamia or with both, were familiar with the scripts of those countries but realized their unsuitability for the conditions of western Semitic life. The main part was played by the Phoenician inhabitants of the Syrian coast towns whose commercial activities supplied them with both the need and the opportunity for invention of the sort. A travelling merchant would find it greatly to his advantage if he could keep his own business records instead of having to employ an expensive scribe, and if at the same time he could avoid the clumsy roundabout transliteration which so distorted his Phoenician language that it was difficult to make sense of the written words. He and his fellows had regularly employed the cuneiform script, and the characters were easy to form; it was their syllabic value that was the trouble. But he knew that in Egypt some of the hieroglyphic signs representing uniconsonantal syllables were used in a shortened form—the vowel sound was dropped and only the single consonant retained; and if that could be done with the hieroglyphic why should it not be done with the cuneiform also?

At Ugarit there have been unearthed numerous clay tablets inscribed with a peculiar kind of cuneiform writing in which the cumbrous Babylonian system is reduced to its simplest form. There are only thirty signs, so that the



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script is properly speaking alphabetic; twenty-seven of them are taken over from the Babylonian, being originally normal syllabic signs consisting of an initial consonant plus an indeterminate vowel, but here used purely as consonants, while three represent vowel sounds only, *'a*, *'i* and *'u*, and a special sign marks the division of words. The script, which was used both for the Semitic and for the Hurrian language, seems to have enjoyed a certain vogue, for examples of very similar writing have been found in Palestine, at both Beth Shemesh and at Mount Tabor, and it is indeed surprising that it should not have been more generally adopted; but whether because its career was cut short at an early stage by the destruction of Ugarit at the hands of the Peoples of the Sea, or for some other reason, it disappeared and left no further trace upon the history of writing.

Much more important from the point of view of later history are the Proto-Sinaitic inscriptions. The first ten of these were found by Sir Flinders Petrie, at Serabit al Khadim in central Sinai, and later expeditions discovered twenty-six more. All the texts are short and ill-written, apparently the work of Semites who, in the early part of the fifteenth century BC, were employed by the Egyptians in the Sinaitic mines; most are rock inscriptions, but a few are upon stone figures of a votive character. Professor Sir Alan Gardiner, who with Professor Peet published the original ten texts, was struck by the ox-head sign (*aleph'*) with which one of them begins and recalled the old contention of Gesenius that the prototypes of the Phoenician letters must have had the shapes indicated by the Hebrew (and Greek) letter-names; having established first the high antiquity of those letter-names he could then attribute due importance to the fact that such of the Proto-Sinaitic signs as were clearly pictorial represent objects whose names occur as the names of letters in the Hebrew and Greek alphabets. On applying the principle to a group of four letters which recurred no less than six times in the inscriptions he found that it read *Ba'alat*, the Semitic equivalent of Hathor, the Egyptian goddess of Serabit al Khadim where the inscriptions were found. Gardiner's identification of the word *Ba'alat* has been generally accepted, but the acceptance of his conclusion necessarily involves acceptance of the premises on which it was based, i.e. that the Proto-Sinaitic script is alphabetic in character, and that its letters, or at any rate some of its letters, are identical in name and function with those of the Hebrew alphabet.

The number of different signs yielded by the thirty-six known Proto-Sinaitic texts is about thirty, which is an almost decisive argument for their being alphabetic and not syllabic, a syllabic system requiring a very much greater number. The individual signs are mainly, if not entirely, pictographic and are close copies of Egyptian hieroglyphs, as indeed might have been expected from a people familiar with Egyptian monuments. But the selection they made is quite arbitrary; those signs were chosen which were easy to draw and easy to recognize, but their sonant values did not follow the Egyptian but were taken from the Semitic names of the objects represented; e.g. the

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picture of a mouth, in Egyptian *r*, from *ri* meaning 'a mouth', is, in the Semitic, *p*, from *puw*. The Serabit al Khadim texts are so short and so illegible that attempts to translate them are not entirely in agreement. They are certainly Semitic and in all probability northern Semitic, i.e. Canaanite. According to their date, which again is still a matter of dispute (Gardiner assigns them to the eighteenth century, whereas Albright, in agreement with Flinders Petrie, puts them to the fifteenth century and places the Lachish, Shechem and Gezer inscriptions between 1700 and 1550 BC), they represent the first, or at least a very early essay made by a Semitic people to evolve a writing system of their own, and as forerunners of the developed Phoenician system they reveal the origin of the modern alphabet.

In Palestine and in Syria there have been found a few isolated inscriptions, generally short *graffiti* on vases, some of which resemble the Proto-Sinaitic script while others, although differing from that script, illustrate efforts in the same direction.

From Tell el Hesi and from Gezer come very short texts resembling the Proto-Sinaitic, and from Lachish a series which both in development and in date (the latest seem to be of the late thirteenth century BC) come closer to the Phoenician and help to bridge the gap between the Proto-Sinaitic and the Phoenician scripts; another example of somewhat earlier date comes from Shechem and shows the advance of the Sinai script northwards in the direction of Philistia. Taken together these sporadic discoveries illustrate the gradual reduction of pictorial to non-pictorial letters, the latter bearing an ever closer resemblance to the Phoenician.

At Byblos there have been found numerous inscriptions in a linear script (not yet decipherable) belonging to the fourteenth century or later; their connection with the Lachish inscriptions and still more with the Proto-Sinaitic inscriptions is not apparent, but we can probably regard these and other isolated monuments[17] as representing ephemeral stages in the evolution of the final script—a progress not necessarily consistent but diversified by local and more or less independent attempts to forge an adequate system. Conventionalized alphabetic signs are engraved upon bronze javelin-heads found at el Khadr near Bethlehem and attributed to the early years of the eleventh century; but the full realization of the attempts to evolve a true alphabet is best seen in a group of inscriptions found at Byblos and dated to the tenth century; two from the tomb of King Ahiram, *c.* 975 BC,[18] one on a building erected by King Yehimilk, and two, of Kings Abibaal and Elibaal, which being inscribed on statues of Shishak (*c.* 945–924 BC) and Osorkon I (*c.* 924–895 BC) respectively can be considered as well dated. The main Ahiram inscription is the long text on the coffin itself, but the script must have been evolved very much earlier than the date of Ahiram's death, for on the wall of the *dromos* leading down to the tomb chamber there is a *graffito* carelessly written by someone who evidently was not a professional scribe, so that knowledge of the script must have been already common property.

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From this script, with its twenty-two signs all purely linear in form, were to be descended not only the later forms of Semitic writing but also the Greek and all modern alphabets.

The linear signs of the tenth-century Phoenician script had in most if not in all cases a pictorial origin, their forms being taken over from Egypt via the Sinaitic; where no resemblance to any Egyptian sign can be recognized we may allow for the possibility of an original creation without validating in any way the general rule that the system was borrowed from Egypt. What the authors of the new script did was to jettison all ideograms and all phonetic signs connoting more than one consonant, concentrate on the twenty-four 'simple' signs of the Egyptian system and use those as the basis for their own. As has been stated above, the Egyptians themselves did on occasion employ these signs as alphabetical, although they never felt it necessary to advance from the syllabic to the alphabetical principle of writing; it is symptomatic that they used the signs alphabetically for the purpose of transliterating foreign names which did not lend themselves to a syllabic rendering.[19] What was true of foreign names was equally true of a foreign language as a whole; the Phoenicians recognized this (as is evident also from the form taken by the Ugarit texts in alphabetic cuneiform) and they therefore eliminated the vowel component and reduced the connotation of the sign to a single letter. Although a few scholars have maintained that the Phoenician script preserved the syllabic character of the Egyptian model it can safely be asserted that it already resembled the later Semitic scripts in being alphabetic. A very strong argument in favour of this view is given by the letter-names, which seem to date back to the first invention of the system; they are the names of letters, not of syllables, and therefore imply an alphabetic system. Experience had shown that a syllabary, however adequate it might be for an agglutinative language, was ill-adapted to a language in which the inflections of a given root word are rendered not by the addition of suffixes, etc., but by internal variation of the vowels, as is the regular practice in the Semitic tongues (e.g. *ktb*, derivatives *katab*, to write, *aktib*, I write, *kâtib*, a writer, *kitab*, a book, *maktab*, an office, etc.) and occasionally in the Indo-European (e.g. sing, sang, sung, song). To express those changes by means of a syllabary would have meant a different sign for each combination of the same consonant with the different vowels, an immense multiplication of signs, whereas on the alphabetic system little more than thirty signs suffice. The difficulty had already been solved by the inventor of the Ugaritic cuneiform alphabet, who introduced special signs for the vowels, but the authors of the Phoenician script seem not to have known of this, or, if they knew of it, they disregarded it; their alphabet was consonantal only; vowels were simply omitted, the reader being trusted to know from the context what vowels had to be supplied. In that it left so much to the imagination, the script might also be called a kind of shorthand, but it is true that in Semitic speech the part played by the vowels is complementary whereas that of the consonants is decisive; the chances, therefore, of mis-

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reading are not so serious as might be supposed. For the Semite a purely consonantal alphabet agreed so well with the genius of his language that the Phoenician example was followed in the derivative scripts and still persists in Arabic and Hebrew; even when the advantage of expressing the vowels was impressed upon him the diacritical marks were the only concession he would make to modernity, and no new signs were added to his alphabet. But when in due course the Greeks, in whose Indo-European language the vowels played a much more prominent part (especially for terminal inflection) took over the Phoenician alphabet in its entirety they were able to complete it with special signs for the short and long vowels just because it had now become possible to spell a word; sounds had been analysed into their component parts and vowel and consonant were upon an equal footing. In the Phoenician alphabet there were signs representing 'weak consonants' not employed in the Greek language; they had occasionally been used in the *plene* writing of some of the Semitic systems, introduced about the ninth century BC, as more or less pure vowels, and the Greeks may have been aware of this; in any case, instead of inventing new signs they adopted those and gave them a purely vowel content; thereby they regularized as an essential feature of writing a device which seems to have been unknown earlier and only sporadically used in later Semitic texts.

In speaking of the Greek alphabet we are, of course, anticipating events. The position about the year 1200 BC was this. The old cuneiform script was still flourishing in Mesopotamia, used by Babylonians and Assyrians alike. Farther north it was adopted by the scribes of Urartu, in the district of Lake Van; it was the normal script of the Mitanni and Hurri people, extending from the Assyrian border westwards to the Mediterranean; in Anatolia it was freely employed for purposes other than monumental, but there for royal inscriptions the Hittite hieroglyphs were preferred; and it was still the diplomatic script for the foreign chancelleries of Syria. The Egyptian systems, hieroglyphic and hieratic, were the only ones in use in the Nile valley but did not extend beyond it—Phoenician craftsmen might use hieroglyphs as ornamental motives but reduced them to a meaningless muddle. On the Syrian coast the Phoenician script was in process of being established, ousting altogether such inchoate essays as had made their brief appearance in Sinai, in Lachish and elsewhere; if in Ugarit, the northernmost of the Phoenician cities, the local cuneiform alphabetic script yet persisted side by side with the syllabic cuneiform, both alike were doomed to speedy extinction by the act of war. Cyprus had its own syllabary which was to survive into classical Greek times, and in Crete flourished the Linear B script whose use extended to the Mycenaean strongholds of mainland Greece, Mycenae, Pylos and others. Apart from western Anatolia and the Ionian coast, as to which we know nothing, it can be said that throughout the whole of the eastern Mediterranean world the art of writing was familiar and in most of the countries was no longer the prerogative of an exclusive priestly caste but had become

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in popular hands the necessary vehicle for business and private affairs of all sorts; even in conservative Egypt crude *graffiti* show that education of a kind was not confined to one class. How widespread was the itch for writing is shown by the fact that at a later period two forms of syllabic script are found in use in Spain, the Tartesian in the south-west, the Iberian in the south-eastern and eastern parts of the peninsula; these must surely have had their beginnings in the early centuries which saw so many experiments in the eastern Mediterranean, experiments from which the Spaniards could not hold aloof.

For farther Asia the material at our disposal does not permit us to follow the course of the development of writing with such detail as is possible in the Mediterranean area. As regards India the complete blank in our knowledge may perhaps not unfairly reflect a blank period in history. So far as our evidence goes, the Harappā script disappeared and left no direct descendants; the fierce Aryan warriors who overthrew the Harappā civilization[20] are not likely to have been writers, and although the Kshatriyas, their knightly caste, were also spiritual leaders of the people and produced poets and philosophers, their works are more likely to have been transmitted orally than in writing; the Aryan epics must have been so transmitted for many centuries. It is only in the later Vedic period that a more settled form of civilization led to the founding of great cities in which literary studies were pursued; but there survive no written documents of that age, and when at last writing is in evidence the script bears no relation whatsoever to that of Harappā. On the other hand, it is gradually being recognized that the Indus valley culture, which at first seemed to be a disconnected episode in Indian history, isolated from anything before or after it, did in fact in some respects link up with later ages; 'Capta, ferum victorem cepit'. Future archaeological discoveries may yet show that, even if the form of the Harappā script perished, yet its tradition influenced the development of Sanskrit writing.

## EDUCATION

The use of a syllabic script, which involves a sign-list at least ten times as long as an alphabet and also allows of differing phonetic values for identical signs, adds greatly to the difficulty of writing. Alike therefore in Egypt and in Sumer the would-be scribe specialized at an early age and had to serve a long apprenticeship in his profession. For a priest attached to a temple writing was an essential accomplishment; all priests therefore would learn to write. Seeing how much advantage could be drawn from the scribe's ability it is easy to believe that the learned would not willingly share the 'art and mystery' of their profession with too many possible rivals. The state service demanded more writers than there were temple priests, and the illiterate public required notaries to assist them in certain matters, so that a class of scribes came into being side by side with the regular priesthood; but it would seem that in

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Egypt the priests did retain a monopoly of education and that schools were normally attached to temples.[21] Scholars are generally agreed that the Egyptians who could read and write formed a very small minority of the population. They must have been recruited from the well-to-do classes, for the poor could not have afforded the cost of the long years of schooling, especially if, as appears to have been the case, the schools were boarding schools, so that the pupil's living expenses were added to the teacher's fees. Parents who could meet those charges were eager enough to have their sons educated, because education was the key to the Civil Service, and the poem already quoted (see pp. 467–8) on the superiority of the scribe to any manual worker shows how enviable were the rewards of scholarship. On Egyptian organization and on the educational methods employed there is no information at all for the early period; from the mass of material dating from the New Kingdom and later we are at liberty to argue back—assuming that the system changed but little in the course of time—and in that case shall conclude that school life in Egypt during the Old and Middle Kingdoms was much the same as that in Mesopotamia in the same period. But while that assumption is probably justifiable there is no need to elaborate it in the case of Egypt by further deduction from later ages, because for Mesopotamia we are fully documented and can cite contemporary evidence for every detail of the description.

The literate element of the Sumerian and Old Babylonian population was proportionately larger than in Egypt. There were 'junior' and 'high' scribes, scribes of the temple and 'royal' scribes of the palace, scribes who served as leading officials in the government and scribes who specialized in particular categories of administrative work, schoolmasters and notaries public, the latter being the more in demand because of the immense importance of foreign and domestic trade and because the law required documentary evidence in any civil action that came before the courts. It may well be that apart from all these professional writers, who numbered many thousands, the business man also might acquire at least a smattering of literary education for his own purposes; in any case it is clear that there must have been numerous scribal schools.

The 'Tablet-house' could be attached to a temple, in the early as in the later periods; a school established in the Nin-gal temple at Ur under the charge of Bel-shalti-Nannar, daughter of Nabonidus (555–539 BC) had a predecessor in the same building as early as the fourteenth century BC. At Mari in the royal palace (*c.* 1800 BC) two rooms containing rows of brick benches might be schoolrooms but, since no school tablets were found in them, are more likely to have served as an official *scriptorium* for the palace scribes; the best example of a school is one in a private house of the Larsa period (*c.* 1780 BC) at Ur.

No. 1 Broad Street was a moderately sized house of normal type built round three sides of a courtyard; it could indeed be described as a small

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house because the disproportionately large area devoted to the domestic chapel left only half the site for the living-rooms. According to the original plan (see Fig. 88, A) the front door, at the Carfax corner of Broad Street, opened on the usual entrance lobby (1) from which one passed by a doorway in the east wall into the courtyard (2); facing one was the guest room (4) with its little closet (3) at the end; on the south side was the staircase (5) leading to the rooms on the upper floor, with the lavatory beneath it, and on the west side a doorway to the servants' room (6) which gave access to a passage (7–9) running along two sides of the chapel (8). But at a later time the entire plan was modified (see Fig. 88, B). A new doorway from the street was cut through the courtyard wall; the doorways from the court into rooms 1, 6 and the lavatory were walled up, and new doorways were made from room 1 to room 6 and from the latter into the lavatory; consequently the courtyard and the guest room now formed a self-contained unit cut off from the rest of the ground-floor rooms. Judging from tablets referring to temple affairs which were found in the passage (7) Igmil-Sin, the owner of the house, was a priest (which might account also for the unusually large chapel) but it was very obvious that his alterations in the building were intended to adapt it to the purposes of a school. In the courtyard and rooms 3 and 4 there were found nearly two thousand tablets including some hundreds of the round bun-shaped type of 'school exercise' tablets used for 'fair copies', etc. It was a small school—it could scarcely have accommodated more than two dozen boys—but presumably it was typical of the schools of the time, and certainly it was not just an elementary school but one catering for pupils of all ages. The bun-shaped tablets, bearing on one face the teacher's fair copy and on the other the pupil's attempt to reproduce it, start with single syllabic signs, then have lists of words beginning with the same syllable, and go on to proper sentences and extracts from the classics. Of the other tablets many were religious texts which were probably used for dictation or for learning by heart; there were numerous mathematical tablets—multiplication tables, rules for extracting square and cube roots, etc., problems in practical geometry, e.g. land surveying or the calculation of the amount of earth to be moved, given the measurements of an excavation, and there were also what one must call *belles lettres*, amongst them a favourite classic describing school life. Such, then, was the material setting of the educational system, a setting of the simplest sort; the scene in the Broad Street school, with the boys seated or squatting in rows in the courtyard and guest room, waiting for the headmaster to come downstairs from his private quarters while the ushers or pupil-teachers supervised the preparation of the morning lesson, is precisely that described in a (later) cuneiform text:

> Into the meeting of master, the courtyard of the tablet-house
> Come, my son. You shall sit before my feet.
> Now I am going to talk to you; open your ears.

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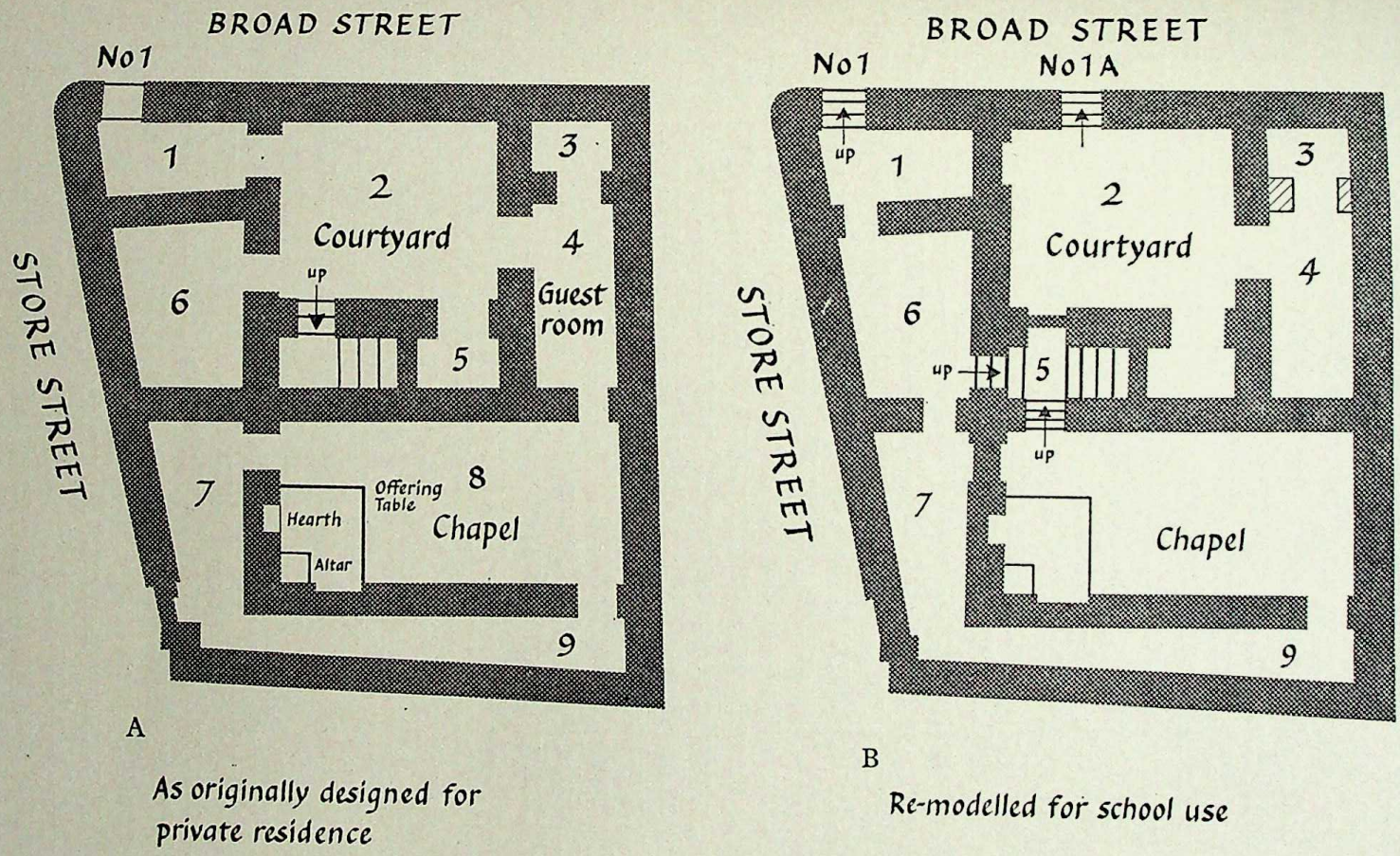


Scale 1 : 425.

FIG. 88. Ground plan of the school at No. 1, Broad Street, Ur.

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Only boys attended the schools. Women scribes existed, and examples of their work have come down to us, but how they received their education we do not know; girl students are never mentioned in the literature of the schools. The boys were for the most part of the upper classes of society; of some five hundred scribes of the early part of the second millennium BC who have put on record the names and professions of their fathers, most are the sons of governors, 'city fathers', ambassadors, temple administrators, military officers, sea captains, tax officials, priests, managers, supervisors, foremen, scribes, archivists and accountants. On the other hand, cases are known in which a charitable person who had adopted an outcast baby—'rescued him from the jaws of a dog'—crowned his benefaction by sending the child to school to 'learn the scribal art': this may have been a rare exception, but at least it means that education was not confined exclusively to a favoured caste.

The school staff consisted of the headmaster, the 'school father' as he was called, and technical assistants—'the scribe of mathematics' or 'of mensuration', 'the man in charge of drawing', 'the man in charge of Sumerian', the 'overseer' or 'man in charge of the school regulations', 'the man in charge of the whip', but for the younger boys at any rate a great deal of the teaching was done by the 'big brother', a senior pupil acting as usher or pupil-teacher. The full school course was a long one, lasting for many years, 'from the time of childhood to maturity', but after about two years a lad might qualify as a *dubsar tur*, a junior scribe, and would be entrusted with the task of helping in the education of one of the smaller boys, setting his exercises, instructing him in the way in which they should be done, correcting them (prior to final correction by the headmaster) and flogging him when he deserved punishment. Discipline was strict. Boys might be 'kept in' over long periods; probably already they were given impositions, though it is only in the Neo-Babylonian time that we find actual examples of pupils having to write 'fifty lines' or 'a hundred lines' by way of punishment; but for the most part correction was by the stick, and the stick was used freely, by masters and by pupil-teachers alike. This is made very clear in the 'Schooldays' essay mentioned above. '"What did you do at school?" "I reckoned up [or, "recited"] my tablet, ate my lunch, fashioned my [new] tablet, wrote and finished it; then they assigned me my oral work, and in the afternoon they assigned me my written work. When the school was dismissed, I went home, entered the house, and found my father sitting there. I told my father of my written work, then recited my tablet to him, and my father was delighted."' This must have been a lucky day, but on the morrow the boy was to be less fortunate. 'When I awoke early in the morning I faced my mother and said to her: "Give me my lunch; I want to go to school." My mother gave me two rolls and I set out. In the school the "man on duty" said to me: "Why are you late?" Afraid, and with my heart pounding, I entered before my teacher and bowed.' But the teacher was correcting the student's tablet of the day before and was not pleased with it, so gave him a caning. Then the overseer 'in charge of the

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school regulations' flogged him because 'you stared about in the street', and again because he was 'not properly dressed', and other members of the staff caned him for such misdemeanours as talking, standing up out of turn, and walking outside the gate; finally the headmaster told him, 'Your handwriting is unsatisfactory', and gave him a further beating. The luckless youth appeals to his father to mollify the powers above in the orthodox way, so the father invites the headmaster to his home, praises him for all that he has done to educate his son, gives him food and wine, dresses him in a new garment and puts a ring on his finger; the schoolboy waits upon him and in the meanwhile 'unfolds to his father all that he has learnt of the art of tablet-writing', and the gratified teacher reacts with enthusiasm: 'Of your brothers may you be their leader, of your friends may you be their chief, may you rank the highest of the schoolboys. You have carried out well the school's activities, you have become a man of learning.' The schoolboy, claiming now the proud title of 'Sumerian', becomes in his turn a pupil-teacher and realizes that a backward pupil is a trial to his patience:

> But you are a young dunce, a braggart;
> You cannot shape a tablet, the clay you cannot mould.
> You cannot write your own name, the clay is not suited to your hand.
> Clever fool, stop, stop your ears. You cannot be like me—I am a Sumerian.

Also, he discovers that discipline is not easy to maintain, and the scene ends with a riot which is stilled only by the appearance of the headmaster with his stick.

The picture is, of course, satirical to the point of caricature. Admittedly, in the private schools at any rate, the headmaster had to make his living by means of the tuition fees collected from the students and may have been glad enough to receive something in addition; admittedly methods of instruction were primitive and sometimes brutal; yet the Mesopotamian schools did provide a sound education and did uphold the general respect for learning as such. The old Sumerian school, probably an appendage of the temple, which aimed at no more than a course of vocational training, had in time become secularized and, with an ever-widening curriculum answering to the needs of a more complex society, had developed into a real centre of learning. 'Within its walls', says Professor Kramer[22] 'flourished the scholar-scientist, the man who studied whatever theological, botanical, zoological, mineralogical, geographical, mathematical, grammatical and linguistic knowledge was current in his day, and who in some cases added to this knowledge.'

## NOTES TO CHAPTER VI

1. In the opinion of Professor I. M. Diakonoff, patriarchal life develops late, sometimes nearly contemporaneously with the urbanization of society; the rights of ownership of the 'patriarch' are not diminished in early urban society. In early Sumer, it is an

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individual family or clan that sells and buys land through its 'chosen men' (*lu-sa-pad*) and a part of the price is paid over to the members of the family. Later, in Old Babylonian as in Middle Assyrian times, it is the head of the family alone who sells the property and receives the price.

2. The whole process of development can be followed in the light of tablets found on various sites. The lowest stratam at Erech, Uruk IV, produced tablets the text of which consists entirely of pictured objects and numbers; these should be dated as approximately 3500 BC. Texts from Jamdat Nasr (*c.* 3500 BC) are generally similar but for the first time use signs with determinative values; the same is the case with tablets from Uruk III. Tablets from Ur dated as about 3250 BC show a few signs sparingly used as syllables to indicate the case of nouns and verbal inflexions; this is the beginning of true writing. The process is carried on by tablets from Fara, wherein signs representing syllables are used not only for inflexions but also for the phonetic spelling of difficult words, a stage reached by about 3200 BC, while in Uruk I, *c.* 2900 BC, signs are employed as syllables for the phonetic complement and for plural ending and the signs generally are strongly conventionalized. As Driver says, archaeologically the sequence is clear.

3. Professor Ralph Turner notes that on this and the following pages the author champions the idea of the Sumerian origin of writing. He holds that the *idea* of writing was only invented once and was taken over from Sumer by other peoples. Scholars are not, of course, all agreed on this hypothesis. See also pp. 381, and 409, n. 20.

4. Dr D. C. Baramki points out that there is a transition between pictograph and hieroglyph. It is true that one cannot convey action or thought in a pictograph, yet one can convey action in a non-phonetic ideogram. Some Uruk reliefs did convey action. This action cannot be read but nevertheless conveys a message and a thought.

5. Professor A. Caquot points out that Sumerian is not the only agglutinative ancient eastern language. Hurrite and Urartaean were also agglutinative. It is, however, true that less and less importance is now being attached to purely 'typological' classifications.

6. According to Professor I. M. Diakonoff, Assyriologists usually propose later dates for the Uruk IV and Fara periods than Sir Leonard Woolley and many other archaeologists.

7. Dr William C. Sturtevant considers that there is no reason why a syllabary cannot distinguish homonyms, just as an alphabet does, by representing the same sound by more than one symbol—although in so doing, each becomes less 'phonetic' and more 'ideographic'. Sir Leonard Woolley recognizes that this is quite true in theory; but in fact the sound *FISH* is represented by the same syllabic sign, whatever its meaning.

8. The following passage on the Chinese writing system has been suggested by Professor Shigeki Kaizuka.

9. For Sir Leonard Woolley's view, see p. 635 sq.

10. Professor Shigeki Kaizuka *et al.* draw attention to the fact that the dating of 'Yao's Calendar' is much disputed; whether there was writing at this period is doubtful.

11. Dr. W. C. Sturtevant points out that many of the greatest specialists do not consider Chinese originally a monosyllabic language; see Otto Jespersen, *Language: Its Nature, Development and Origin* (London, repr. 1949), pp. 367 sq.; H. A. Gleason, *An Introduction to Descriptive Linguistics* (New York, 1955), pp. 305–6, and others.

12. See p. 409, n. 20, and above, n. 3. Professor I. M. Diakonoff and other specialists point out that the first texts from Egypt seem to date from the last quarter of the fourth millennium BC as do those from Sumer.

13. Professor J. Leclant points out that in Egypt writing is contemporaneous with the creation of the single state, and with the systematic organization of irrigation. Writing was, in effect, originally an instrument for the communication of orders, rather than for a registration of ideas. It is absolutely essential for organization and command.

14. The most recent research disagrees with this position; the point of view presented by Sir Leonard Woolley farther on (p. 651) doubtless corresponds more closely to the facts. See E. Laroche, *Les Hiéroglyphes Hittites*, Part I. *L'Écriture* (Paris, 1960), p. 255: 'There are undoubtedly analogies such as are inevitable between two pictographic systems,

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thus both in Egyptian and in Hittite a weapon-bearing arm is linked to the idea of "strength". Certain special signs (such as the cross of life and the winged sun) have been borrowed. But the idea of any large-scale copying of Egyptian hieroglyphs by the Hittites must be abandoned.'

15. According to Professor I. M. Diakonoff, the knowledge of the utility of writing is not in itself a sufficient reason for borrowing the practice of writing: the people in question must also have reached a certain level of economic development; the ancient Germans knew of the idea of writing for centuries and even had developed a kind of alphabet of their own (the Runes), but did not apply their writing system to anything better than magical uses until they had reached the stage of class society. Sir Leonard Woolley and Professor Ralph Turner do not consider there is any essential connection between a *class society* and *writing*. There is a connection between writing and the possession of an economic surplus. All writing had its origin in economic uses, but there is no *direct* connection between writing and class. However, writing intensified differences; for instance, literate versus illiterate classes and literate versus preliterate peoples.

    Professor Diakonoff, having read the above commentary, requested that an additional explanation of his position be given:

    'This critique of my position is due to a misunderstanding. I never maintained that there was a direct connection between a class society and writing; but a class society develops *when* there is an economic surplus. What I call "class society" Sir Leonard Woolley calls "urban civilization", and the use of writing is included in the definition of "urban civilization".'

16. *Palace of Minos*, I, pp. 654 sq.

17. Such as the Wadi Ganah text which Hooks wrongly describes as Proto-Sinaitic.

18. Professor I. M. Diakonoff and Dr D. C. Baramki both emphasize that the dates of King Ahiram are still controversial, certain scholars dating him considerably earlier.

19. Professor John A. Wilson observes that the Egyptians did in fact have about two dozen signs which were monoconsonantal and which, therefore, we call 'alphabetic'. However, their use was not as rare as held by the author; a common use is given on p. 647 (the wavy line *n*). These signs were chiefly used for normal Egyptian writing. Foreign names from the Eighteenth to the Twentieth Dynasty were presented in a formalized way in which the essential element was an old biconsonantal sign rather than a monoconsonantal sign.

20. For detailed discussion of this viewpoint cf. p. 412, n. 38.

21. Professor J. Leclant observes that education took the form of lessons given by masters particularly well qualified by their age, their experience and their patience. Certain celebrated teachers of the Old Empire are known to us: there were princes, viziers, high officials, such as architects and sometimes priests. Under the New Empire, besides high officials in the army or the administration, we find also simple scribes in no way connected with the priesthood (cf. H. Bruner, *Altaegyptische Erziehung* (Wiesbaden, 1957). Whatever their grade or function in society, the best school for officials was at the feet of their own father or of some influential relative who could provide them with an education. W. Helck, *Zur Verwaltung des Mittleren und Neuen Reichs* (1958), pp. 435 and 541.

22. S. N. Kramer, *From the Tablets of Sumer*, p. 4.

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CHAPTER VII

# THE SCIENCES

## GENERAL INTRODUCTION

In that wide field which we call the arts and sciences the area covered by early man was limited; he was more interested in evolving and improving the things which were suited to his conditions of life than in inventing such things as would radically change those conditions. But within those limits he did achieve a technical and artistic success comparable to that of man in recent times. The public of today is often astonished, and disconcerted, by the material evidence which shows that the ancient craftsman was in skill and technique the near rival if not the equal of the more sophisticated craftsman of the twentieth century AD; on the other hand the student is prone to insist upon the fact that all this knowledge and technique were purely empirical and lacked altogether that scientific background which is the guarantee of modern production. The astonished admirer is only too apt to falsify history by accrediting to ancient man some esoteric science or illumination of which the secret has been lost; the student is right in his judgement provided that he does not let his criticism of method blind him to the merits of performance.

The ancient craftsman did depend entirely upon empirical methods. He experimented, blindly for the most part, but with infinite patience; and in so far as he did experiment and observe his results he was fulfilling the first requirement of science. But when he had once hit upon the way of doing what he wanted to do, he was satisfied. Modern man summarizes his successful series of experiments in a scientific formula which, by explaining how the process works, rationalizes the problem and is conveniently understood by his fellow-workers. Ancient man merely laid down the rule of what you should do (i.e. of what he had done) in order to repeat his initial success; it was as simple and as practical as a recipe in a cookery-book. Thus the rules for making glazed earthenware, codified by a master potter at Nineveh in the seventeenth century BC, can be followed by the modern potter[1] and produce precisely the desired effect. But whereas the modern potter explains the process by the use of chemical formulae, the Nineveh inventor was content to know not how the process worked but how he was to work the process. He was of course aware that there was something behind his recipe, but it was not his business to enquire into it: all these changes and transformations were, in their way, miracles. You did certain things in the right order (and probably said the right words as you did them, or even offered the right sacrifice) and the miracle happened; which obviously was the work of the gods. The modern man, assuming that because his chemical formula defines the *how*

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it also explains the *why*, looks no farther than the formula and does not think of the god as a necessary postulate; in scientific terms he has correlated the 'recipe' with the observed processes of natural law; and mere empirical success has little value for him until it has been thus rationalized. For the craftsman of the second millennium BC the universe was not rational, because the gods who ran it were moved more by whims and passions than by reason; so he was satisfied if he could obtain the knowledge, or the ritual, which made miracles possible. In the two cases the practical result might be much the same, but the approach was very different.

In Chapter IV there has been described the process whereby the ancient goldsmith made that granulated work the secret of which was lost until a few years ago, and it was there pointed out that whereas the principle involved is that if a copper salt and a glue be heated together the former turns to copper oxide and the latter to carbon, and that the carbon, combining with the oxygen in the copper oxide, goes off as volatile carbon dioxide, leaving metallic copper, that principle was entirely unknown to the old craftsman, who understood only the practical technique. In most fields technical knowledge anticipated theory, and this is particularly true in the chemical field. Metallurgy, in which wonderful results were obtained, yet remained a mystery to the workers. The mere fact that metal could be got from stone, as by a transmutation of matter, was inexplicable except as a divine miracle; but it encouraged experiments of all sorts. Men found out how to refine metals and to alloy them, so that for gold alone Akkadian has sixteen different names mostly denoting different colours; the tablets give us recipes for synthetic copper and synthetic silver, and that alone is enough to prove the ingenuity of the experimenters and their chemical ignorance. They were, of course, mistaken in thinking that they could manufacture synthetic metals, but the mistake was a natural one, seeing that there was so much that they could do and that they had no means of deciding what was and what was not possible of achievement. Thus, the Egyptians coloured gold surfaces by dipping the metal in a solution of iron salts and then heating it, and dyed stone with iron vitriol. The Sumerians made, or perhaps imported from the Indus valley, cornelian beads etched with elaborate patterns in white—the cornelian was coated with a layer of carbonate of soda and heated until it was bleached white; then the parts which were not intended to be white were stopped out with a cement containing oxide of iron and the colour was restored by re-heating. Lapis lazuli was highly treasured both in Egypt and in Mesopotamia for jewellery and small objects, but since it could be obtained only from the mines of Badakshan it was a costly luxury and in both countries a synthetic substitute was very popular; the recipe for this was to mix together in powder form silica, malachite, calcium carbonate and natron and to heat the mixture for twenty-four hours at a temperature of between 800° and 900° C. Clearly, a formula so elaborate could have been arrived at by people ignorant of chemistry only as the result of prolonged

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experiment, and in the course of that they would learn incidentally a great deal about the properties of various substances, all of which knowledge might be turned to practical uses. This unco-ordinated invention can be illustrated by the somewhat curious fact that neither the Egyptians nor the Mesopotamians succeeded in making soap, in spite of the importance which both attached to personal cleanliness and in spite of the fact that the detergents in use were very numerous; boiled oil and alkali was the commonest recipe, but in addition we find references to fuller's earth, natron, potash, soda, resin and salt, together with palm-oil and castor-oil, and lyes from the ashes of beech-wood, rue and other plants; the cleansing properties of all these had been duly noted, but not until late in the first millennium was real soap made from them.

The ancients experimented, studied and observed, and in a rather elementary way they classified their knowledge. To the root word which was the name of the *genus* the Sumerian language adds various suffixes denoting characteristics peculiar to the species or individual; and although these generally deal with outward appearances yet some imply actual tests, as when a species of stone is distinguished as being liable to effervesce if treated with acid, or when the reactions to heat are described. They did in time amass a vast lore concerning the properties—including the chemical properties—of a wide range of natural substances; but all these items of empirical knowledge, instead of being treated collectively as a body of data from which scientific conclusions might be drawn, were treasured in isolation, each one a new fact related not so much to the accompanying facts as to the ultimate divine order. If this knowledge had to be classified and a term invented for each new 'species' discovered or invented, it was to satisfy not science but superstition: to know the name of the thing gave one power over the thing and so helped one to obtain mastery over nature. Of course there was speculation, but it was along such lines as these, and the secrets of the metallurgist were in time taken over by the alchemists and astrologers as the material for magic.

## MATHEMATICS, INCLUDING GEOMETRY

### *Egypt*

Man's advance in knowledge throughout the Bronze Age was seldom uniform, in spite of the interrelations between different countries to which reference has constantly been made, and this is specially true of mathematics. We cannot treat of the Middle East as a whole; rather is it necessary to emphasize from the outset the absolute contrast presented by the two leading civilizations. The Babylonians possessed a scientific knowledge of algebra, geometry and arithmetic. The Egyptians, on the contrary, had in these subjects no real science at all.[2]

So categorical a denial may seem inconsistent with known performances which we certainly cannot afford to underestimate if our account of man's

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progress is to accord with historic facts. The Egyptians, early in the Dynastic period, drew up a calendar which is at the base of that in use today, they designed and built their pyramids with no appreciable error of measurement or calculation, they could estimate areas and bulks accurately, and they had squared the circle with a closer approximation to the truth than was reached by any other people until Greek times; these achievements, stressed by many writers, make it not altogether surprising that ancient Egypt has been popularly credited with an esoteric knowledge of science unrivalled in later ages. The facts are indisputable, but the conclusion drawn from them is fantastically wrong.

The Egyptian had mathematics as the basis of geometry, and for him the basis of mathematics was simple addition. He never, so far as we know, formulated general principles; he did not study the subject for its own sake but merely wanted certain working rules which would enable him to deal with practical problems in daily life, and so long as the method evolved met his immediate needs he was content, and the method remained in use without any thought on his part that it might be improved or simplified. The documentary evidence from which we derive our knowledge of early Egyptian mathematics—one leather roll and five papyri, a mere six in all—date from the Twelfth Dynasty (*c.* 2000 BC) or from the immediately following Hyksos period; the stage at which we then find them may quite possibly have been reached (as some authorities believe to have been the case) as early as the Pyramid age (*c.* 2700 BC) but whenever it was, having reached that stage they seem to have simply stagnated; certainly Egyptian multiplication on the additive principle maintained itself unchanged right up to the Hellenistic period. The point is that the system could be made to work, and for purely utilitarian ends that was sufficient. The Rhind Papyrus (our principal source) does indeed in its exordium profess to teach 'complete and thorough study of all things, insight into all that exists, knowledge of all secrets', but really it deals only with numbers and the calculation of fractions for the solution of practical problems, those of the administrator, the tax official and the architect; only a few purely theoretical problems are set, to provide exercises on the calculation of fractions.

The Egyptians had a decimal system of numeration. There were separate signs for unity and for each power of 10 up to a million; there was no zero sign, and as there were no separate signs for numbers between 1 and 10, or for multiples of 10, signs were repeated up to the requisite number of times and merely had to be placed in a row (from right to left) to give the complete number. Thus:

| | | | | | |
|---|---|---|---|---|---|
| I = 1 | therefore | III = 3 | | II III = 5 | |
| ∩ = 10 | therefore | ∩∩ = 20 | | ∩∩ ∩∩ = 40 | |
| ℓ = 100 | therefore | ℓℓ = 200 | | | etc. |

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and the number 142 is written ∩∩9 / ||∩∩, 257 is written ||| ∩∩ 99 / |||||∩∩; it is a clumsy form of numeration, but an easy one.

The entire system, as has been said above, was based on addition. Given the numeration, the process was a simple one, for all that one has to do is to count the numbers of units, tens, hundreds, etc., and enter them accordingly; thus for the two numbers 142 and 257 the sum total is written |||| ∩∩∩∩999 / |||||∩∩∩∩; the addition of the parts yields the sum of the whole.

A special case of addition, and the most straightforward, is duplication, when the number is simply added to itself. This was, for the Egyptian, the basis of all more advanced calculations.

Multiplication by any number larger than 2 is done, according to the teaching of the Rhind Papyrus, by doubling the given number the requisite number of times and then adding the results; thus, to multiply 12 by 12 the following steps are taken:—

| | | | |
|---|---|---|---|
| \| | (1) | \|\|∩ | = 12 |
| \|\| | (2) | \|\|\|\|∩∩ | = 24 |
| \|\|\|\| | (4) | \|\|\|\|∩∩ / \|\|\|\|∩∩ | = 48 |
| \|\|\|\| / \|\|\|\| | (8) | \|\|\| ∩∩∩∩ / \|\|\|∩∩∩∩ | = 96 |

and since $4 + 8 = 12$, four times 12 and eight times 12 are to be added together; accordingly in the papyrus those numbers 4 and 8 are marked with a tick and the corresponding quotients 48 and 96 are added to make 144, which is written, together with the hieroglyphic *dmd* (a sealed scroll), as the final result ∩∩9 / ||∩∩ [scroll].

Where a number was to be multiplied by 10 no such calculations were involved because it was only necessary to substitute 'ten' signs for units, 'hundred' signs for 'tens' and so on. Another of our main sources, the Kahun mathematical papyrus, shows how advantage can be taken of this decimal factor to shorten the multiplication process; one can multiply by 10 and also (by means of halving that result) by 5. Thus the sum $16 \times 16$ can be worked out, by the same additive method as when the multiplication was by 2, as follows:—

| | | | |
|---|---|---|---|
| \| | (1) | \|\|\|∩ / \|\|\| | = 16 |
| ∩ | (10) | ∩∩∩9 / ∩∩∩ | = 160 |
| \|\|\|\|\| | (5) | ∩∩∩∩ / ∩∩∩∩ | = 80 |

and since $1 + 10 + 5 = 16$, we have the total ||| ∩∩99 / |||∩∩∩, 256 [scroll].

Division is simply the inverse of multiplication; it is identical in principle and looks identical when written down. In the Rhind Papyrus the formula

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leaves no doubt as to the view taken by the Egyptians of the process of division: it runs 'Add, beginning with 80, until you get 1,120', i.e. 'divide 1,120 by 80', which is done in the following way:

| | | | |
|---|---|---|---|
| I | (1) | ∩∩∩∩ ∩∩∩∩ | = 80 |
| ∩ | (10) | 99999999 | = 800 |
| II | (2) | ∩∩∩9 ∩∩∩9 | = 160 |
| IIII | (4) | ∩∩999 | = 320 |

Since the number 1,120 is given by the sum of the multiplication results of 10 and 4, these added together give 14 as the answer to the division sum.

For the practical purposes which the Egyptian mathematician had in view, e.g. the distribution of rations amongst workmen or the calculation of volumes, fractions would often have to be used. Now the Egyptian had no notation for expressing mixed fractions with numerator and denominator as employed today. He recognized the few 'natural' fractions, $\frac{1}{2}$, $\frac{1}{3}$, $\frac{2}{3}$, $\frac{1}{4}$ and $\frac{3}{4}$, for which he had specific names, and by a quite early date he had extended the list to include all unit fractions, i.e. those having 1 as the numerator, but anything more complicated than that he could not express. Mixed fractions had to be broken down into a series of unit fractions which together made the desired total—i.e. he obtained his result by the same additive method as lay at the root of all his mathematics, so that our fraction $\frac{7}{12}$ would be resolved into $\frac{1}{3}+\frac{1}{4}$, or $\frac{1}{2}+\frac{1}{12}$.

The simplest calculation is with 'natural' fractions having the same denominator, examples of which are given in the mathematical leather roll BM 10250, dated to about 1700 BC:

$$\frac{1}{6}+\frac{1}{6}=\frac{1}{3}$$
$$\frac{1}{6}+\frac{1}{6}+\frac{1}{6}=\frac{1}{2}$$
$$\frac{1}{3}+\frac{1}{3}=\frac{2}{3} \text{ (using our notation)}$$

deduced from which we find further relations applied in the Rhind Papyrus:

(1) $\frac{1}{3}+\frac{1}{6}=\frac{1}{2}$

(2) $\frac{1}{2}+\frac{1}{3}+\frac{1}{6}=1$

(3) by adding $\frac{1}{6}$ to each of the members of (1) above, we obtain the important formula:

$\frac{2}{3}=\frac{1}{2}+\frac{1}{6}$

and by again adding $\frac{1}{6}$ to both sides and then writing the result from right to left, we get:

(4) $\frac{1}{2}+\frac{1}{3}=\frac{2}{3}+\frac{1}{6}$

and by adding $\frac{1}{6}$ to both sides of (2) above, we get:

(5) $\frac{2}{3}+\frac{1}{2}=1+\frac{1}{6}$

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These rules are not stated explicitly in the Rhind Papyrus but are taken for granted, since every Egyptian computer was expected to know them by heart; they supply all that he needed to know about calculations with halves, thirds and sixths; thus, if he wanted to work out $\frac{2}{3}$ of a unit fraction such as $\frac{1}{11}$, he took formula (3) above and obtained $\frac{1}{22}+\frac{1}{66}$. Moreover, by dividing the figures in these formulae by 2, 3, 4, etc., he could get further relations between fractions; these, being more difficult to remember, might be given in tables of reference such as are found in the leather roll:

$$\frac{1}{9}+\frac{1}{18}=\frac{1}{6}$$
$$\frac{1}{12}+\frac{1}{24}=\frac{1}{8}$$
$$\frac{1}{15}+\frac{1}{30}=\frac{1}{10} \text{ etc.}$$

On the principle of the five formulae above, the Egyptian was able to deal with all fractions whose denominator was divisible by 2 or by 3; with fractions of other types a typical method was that of *regula falsi*, i.e. an assumption, followed by such alteration as was needed to give a correct result. Thus, to take an example from the Rhind Papyrus, the problem is 'What number added to its seventh part gives nineteen?'; the number most easily divisible into seven parts is 7, so we take that and add the seventh part, yielding 8. Now we have to 'operate with 8 so as to obtain 19'. Doubling 8, we get 16, which is 3 short; so we take one-half of 8 and do that again and again, thus:

| | |
|---|---|
| 1 | 8 |
| 2 | 16 |
| $\frac{1}{2}$ | 4 |
| $\frac{1}{4}$ | 2 |
| $\frac{1}{8}$ | 1 |

and since $16+2+1=19$, the result is 2, $\frac{1}{4}$, $\frac{1}{8}$ ($2\frac{3}{8}$ in our notation) which multiplied by 7 gives the answer $16\frac{5}{8}$.

Another and more scientific method of duplicating fractions whose denominators contain the numbers 5 and 7 was contained in the rule 'To calculate $\frac{2}{n}$ ($n$ being the denominator in question) divide 2 by $n$'. To us, accustomed to our own notation, this seems tautologous; to the Egyptian it was not, because the problem of duplicating $\frac{1}{5}$ is totally different from his accustomed additive problem which he stated in the words 'Calculate with 5 until you obtain 2'. To duplicate $\frac{1}{n}$ by dividing 2 by $n$ was a new idea. It was worked by means of the $\frac{1}{2}$ and the $\frac{2}{3}$ sequences; the question is asked, 'What part is 2 of 5?'; the answer is, one-third of 5 is $1+\frac{2}{3}$, a fifteenth of 5 is $\frac{1}{3}$, and since these two ($1+\frac{2}{3}+\frac{1}{3}$) add up to 2, the result of the division is $\frac{1}{3}+\frac{1}{15}$. 'What part is 2 of 7?' A quarter of 7 is $1+\frac{1}{2}+\frac{1}{4}$, a twenty-eighth of 7 is $\frac{1}{4}$, and since these two ($1\frac{3}{4}+\frac{1}{4}$) add up to 2, the result of the division is $\frac{1}{4}+\frac{1}{28}$. Because these divisions are too complicated to be memorized easily, they were embodied in tables of reference; these are

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straightforward up to the divisor 29, but from 31 onwards are worked on a different system which introduces auxiliary figures (distinguished on the tables by the use of red ink!) corresponding in our notation to the numerators of fractions reduced to a common denominator. The rule would seem to be, 'When a somewhat complicated sum of fractions has to be compared with another such sum, or has to be complemented to 1, then the smallest of the fractions is taken as a new unit and the other fractions are expressed in terms of it'. Beyond this, Egyptian computation technique could not go; but, clumsy though the system of auxiliaries may be, yet by its means every division, no matter how complicated, could be carried out.

It will be seen that Egyptian mathematics (ultimately multiplication) is essentially a written operation; there were no principles which could be applied generally, and every problem had to be worked out individually, nor could any algebraic formula be adapted to the system of notation. By dint of considerable ingenuity and of infinite patience the Egyptian was able to meet all his practical needs by the use of a means childishly imperfect; the sources available to us suggest nothing in the nature of advanced science, and we may well believe that in that respect he was incurious as well as ignorant.

His geometry is a case in point. He could, for instance, if given the height of a pyramid and the measurement of its base, calculate its inclination; thus, the height being 250 cubits and the base 360 cubits, he calculates, half of 360 is 180; $\frac{180}{250}$ equals $\frac{1}{2}+\frac{1}{5}+\frac{1}{50}$ of a cubit; a cubit being 7 hands, multiply by 7 and the inclination, i.e. the number of hands by which the inclined plane departs from the vertical in a rise of one cubit is $5\frac{1}{25}$ hands. The area of a triangle or a rectangle he could determine correctly by multiplying height by base, the base, in the case of a triangle, being first halved 'in order to make the triangle square'. His approximation for the square of the circle, $\pi = 3 \cdot 1605\ldots$, was remarkably correct; it was obtained by squaring $\frac{8}{9}$ of the diameter, and the formula may be thought to suggest (though this must remain a mere suggestion) that it resulted from laborious experiment with squares and right-angled triangles adjusted to a circle. This empirical method, however, cannot explain how the Egyptian was able to calculate correctly the volume of the frustrum of a square-based pyramid, given the height and the measurements of lower and upper base, the formula for which operation is found in a Moscow papyrus; the problem, unique in Egyptian mathematics as known to us, can scarcely have been solved on the purely arithmetical base elsewhere invariable, and may indicate a borrowing from Babylonian algebra.[3]

*Mesopotamia*

In contradistinction to the Egyptians, the Babylonians approached mathematics by way not of arithmetic but of algebra. Their predecessors, the Sumerians, who were admirable arithmeticians, had invented a sexagesimal

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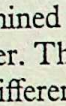
notation for whole numbers and for fractions which enabled them to calculate with fractions as easily as with integers. The system is simple. Numbers under 60 are written in the ordinary decimal notation; the vertical cuneiform wedge = 1, and is repeated for all numbers up to 9, after which the double wedge stands for 10 and is repeated up to 50, but with 60 we start counting anew, with 60 represented by  , the value of each symbol being determined by its position in the group of symbols which together give the number. This is, of course, precisely the same as the system in use today, the only difference in the notation as a whole being that (*a*) the Sumerian is a sexagesimal instead of a decimal system, and (*b*) it contains no cypher (later on, a special sign was used for the empty place between the digits, but not until the Greek period was the zero sign used also at the end of a number) so that there can be an ambiguity as to the value to be assigned to the integers. The positional notation was an enormous advantage. Whereas a Roman, for instance, would normally work out his multiplication sums by the help of an abacus, the Babylonian had a series of multiplication tables to assist his memory and to save trouble in working out sums. With the same tables he could as easily multiply sexagesimal fractions as if they were whole numbers, just as we today deal with decimal fractions as if they were whole numbers and after multiplying put the decimal point in the proper place. If to those accustomed to a decimal system the sexagesimal appears over-complicated, that is really due more to habit than to any inherent difficulty of the latter; actually for fractions the sexagesimal denominator was of the greatest advantage, and is still retained for time fractions—minutes and seconds—and for the divisions of the circle. The fundamental principle of the positional notation is that 1 and 60 are represented by the same symbol, though for 60, the 'big unit', the symbol may be drawn rather larger than when it stands for 1; by a natural process of simplification, since 1 squared = 1, the 'big unit' squared (3,600) could also be represented by 1. This square, called the *šár*, originally terminated the system, but later the 'big *šár*', or 60 cubed, was added as the final unit.

The origin of the system is still in dispute, but most authorities agree in attributing it to metrology. Certainly the weights are consistently sexagesimal —180 grains make a shekel, 60 shekels make a *mina*, 60 *mina* make a talent, and as in each case the larger unit is sixty times the smaller, so, conversely, the smaller is $\frac{1}{60}$th of the larger, and it is noteworthy that in the sexagesimal system $\frac{1}{60}$ is known as the 'small unit'. But however it arose, the important fact is that the Sumerian notation and the Sumerian arithmetical technique made possible the highly developed algebra evolved by the Babylonians. Not only was the Babylonian scribe in the time of Hammurabi perfectly familiar with square and cube roots (we have tables of exact square and cube roots, and tables giving the approximate computation of square roots) but he knew

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also how to solve linear and quadratic equations involving two or more unknowns. He would normally have by him, for the convenience of ready reckoning, multiplication tables and tables of inverses ($1/x$) and also of squares and cubes; the tables were arranged in a practical manner so that all operations, whether with integers or with fractions, could be carried out by a single reference and without further thought. If a division left a remainder, or if it was desired to find the square root of a number which was not a perfect square, then an approximation was used, repeated adjustments reducing the error to a minimum.

The algebraical texts, most of which date from the early part of the second millennium BC, do not give general formulae such as we should expect to find in a modern work; they set problems, but since these are solved by the same methods of calculation it is evident that the formulae existed although they are not set out in abstract terms. Again, because the problems are individual, the Babylonian does not use purely algebraic symbols like our $x$ and $y$; but as the signs which he does use for length, breadth, area, content, etc., are not declined they serve precisely the same purpose as our more formal $x$ and $y$ and the Babylonian equation can be expressed in our notation without doing any violence to the original; thus, the problem:

I have multiplied length and width, thus obtaining the area. Then I added to the area the excess of the length over the width; 3·3 (i.e. the result was 183). Moreover, I have added length and width; 27. Required, length, width and area.

can be expressed in our terms:

$$\begin{aligned} xy + x - y &= 183 \\ x + y &= 27 \end{aligned}$$

The method employed for the solution is given in a series of steps which in our notation are as follows:

First, a new variable, $y'$, is introduced in place of the actual width $y$, thus $y' = y + 2$, i.e. $y = y' - 2$. Then, by adding the two original equations, we get

$$\begin{aligned} xy' &= 183 + 27 = 210 \\ x + y' &= 27 + 2 = 29 \end{aligned}$$

and the solution of this simplified form is got by a fixed recipe which appears constantly in other texts and may be described thus:

$$xy' = P;\ x + y' = a$$

the solution of which is:

$$\begin{aligned} x &= \tfrac{1}{2}a + w \\ y &= \tfrac{1}{2}a - w \\ w &= \sqrt{(\tfrac{1}{2}a)^2 - P} \end{aligned}$$

this last formula not being directly stated but implicit in all examples given of this method of calculation.

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The problems set may involve systems of equations with three or more unknowns, cubic equations and mixed cubics, sometimes of a sort difficult even for the modern mathematician. The Babylonian did not have to work out all these for himself, but by reference to the tables of roots; the problems are school exercises intended to teach the scholar the use to which his tables should be put. How the underlying formulae were obtained we cannot be sure; possibly they were worked out by the use of diagrams, after the fashion of Euclid, and it is certain that a square of a number was regarded as the area of a square; but on the other hand a diagrammatic basis is often ruled out altogether, as in the problem quoted above, in which the area, $xy$, and the linear measurement $x-y$ are simply added together, which is a geometrical absurdity. For the Babylonian these were all pure numbers, and the mental process by which the problem was approached was algebraic. The problem may be definitely geometric, but the scribe merely had to know—and he did know—the area of a triangle and the area of a trapezoid, and the rest was done by algebra. An example cited by Professor Neugebauer (MKT I, p. 130) solves a difficult geometrical problem without any reference to a diagram: the area of a trapezoid is divided into two equal parts by a line $x$ which is parallel to the bases $a$ and $b$ of the trapezoid; find the length of $x$. The formula used is $x^2 = \frac{1}{2}(a^2 + b^2)$, a purely algebraic solution in abstract form, without numbers.

If, for the area of a circle and for the length of its perimeter, the Babylonian, taking $3d$ as the circumference and $3r^2$ as the area, where $d$=the diameter and $r$=the radius, arrived only at an approximation not so close to the truth as the Egyptian, the fact is really beside the point;[6] we may perhaps surmise that it resulted from his trying to solve the problem by abstract calculation which proved to be beyond his powers, while the Egyptian used the empirical method with a success measured by his patience and perseverance. The truth remains that in arithmetic and algebra he not only far surpassed the Egyptian pragmatically, but further had worked out those scientific exercises of geometry which for the Egyptian were a closed book; thus, the Babylonian knew the 'theorem of Pythagoras' about the square of the hypotenuse of a right-angled triangle being equal to the sum of the squares of the other two sides, and again, by discovering a method of finding right-angled triangles whose sides are expressed in integers he anticipated by fifteen hundred years Pythagoras and his Greek followers.

## THE CALENDAR

Any people whose economy is based on agriculture must needs observe the seasons, and since the farmer must plan ahead he requires something in the nature of a calendar which will give him due warning of the year's changes. Again, religion demands that certain festivals should be celebrated at fixed times; these are seasonal, generally related to agricultural happenings, and they too have to be planned in advance, and that with more accuracy than is

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called for by field work, for here it is a matter of special days and not merely of seasons.

The drawing up of a formal calendar involves more prolonged and concentrated observation than the farmer himself can afford, and demands a record best kept in writing, which is beyond the farmer's powers; it is a task which would naturally be allotted to the leisured and the educated, i.e. to the priests or priestly scribes.

*Mesopotamia*

In Mesopotamia most of the land belonged to the temples. The procession of the seasons was regulated by the gods, and the agricultural operations proper to each, and the fruits of them, all fell within the provinces of the various deities, so that from the farming as well as from the ritual point of view the priests were intimately concerned. At a very early date, therefore, an official calendar devised by the priests was issued and came into general use. It was a practical working system, based on a somewhat muddled compromise between two conflicting principles.

We have already, in Part II, Chapter II, remarked on the unpredictable character of the annual floods in southern Mesopotamia, on which the whole of agriculture depended; its very uncertainty made a calendar essential, but afforded no help towards the drawing up of one; something more stable had to be found. The most obvious regularly recurrent time-measuring phenomena were the changes of the moon, and the important place in the Mesopotamian pantheon accorded to the Moon god Nannar is in accord with this. The Babylonian calendar, therefore, was based upon the lunar months, consisting of 29 or 30 days each, the change not coming in any regular order but determined by observation of the new moon—observation, of course, by some duly authorized person who would make his report to the government. Experience over a very short period sufficed to show that the number of longer and shorter months was about the same, and also that at the end of 12 lunar months one had returned to much the same season (reckoned by crops, etc.) as one had started from, so 12 was taken as the number of months required for a year. In early Sumer the names given to the months varied greatly in the different city states; they were generally called after the religious festivals celebrated in the course of each, and the cities, with their different patron gods, would not keep the same feast-days; only in Hammurabi's reign was uniformity imposed and the names assigned to them which are still used in the Jewish calendar. The four phases of the moon led to a division of the month into four seven-day weeks with one, or two, feast-days ('Month days') added at the end to make up the full tally; this was the official calendar which because it was ruled by the moon best suited religious requirements. But the uncertainty regarding the extra feast-days was an unwelcome complication for the business man; consequently, in order to regularize such matters as the calculation of interest and the dates of payments another parallel system



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was introduced whereby the fundamental unit, the mean month, was divided into six weeks of five lunar days each. This system was regularly used by the merchant colony of Kanesh, Anatolia, and seems to have been employed at the same early date (2000 BC) in Sumer also; these 'lunar days' under the name 'tithis' survive up to the present day in Indian calendars. The origin of the five-day week is not known, but since the day was divided into 12 'double hours' the week of 60 'double hours' may have been an artificial invention basing itself on the hexagesimal unit. The day began at nightfall.

Thus far, then, the lunar principle was strictly observed by the calendar-makers. But Shamash the Sun god 'rules the ways of Heaven and of Earth' and therefore the Babylonian year was a solar year. It started in the spring. We do not know what event was taken to fix the year's beginning; it may have been the barley-harvest, it may have been the equinox. The most primitive of people would learn that in winter the days were shorter and the nights longer than in summer, whereas the Babylonian 'lunar day' was uniform throughout, and more curious observation would discover that twice in the year the periods of light and darkness in that day were exactly equal, and again that this balance recurred with absolute regularity. Some such fixed point was necessary for estimating the length of the solar year, and because gradually increasing daylight seems to give promise of new life the spring equinox might well commend itself as the natural beginning of the year. However that may be, the calendar-makers started their year in the spring and determined its length as approximately 12 months and 11 days, making roughly a total of 365 days; this was what Shamash had ordained and they accepted it.

The fact that the solar year was hopelessly inconsistent with the months ordained by Nannar had to be accepted also; this was Heaven's doing, and man must just make the best of it. The 12 months of 29 or 30 days each was the closest approximation possible, but as their total gave only 354 days the discrepancy was very serious in practice; thus, for instance, in the course of little more than a generation, the spring festival at which the god's marriage was the guarantee of earth's fertility would have been celebrated progressively through the entire cycle of the seasons. The remedy was to insert an intercalary month whenever necessary, so as to restore harmony between the two systems and the two deities; but since the divinely instituted order of the months could not be disturbed, by a pious fraud an existing month was simply doubled in length without any change of name. At a later period this leap month was inserted every second or third year, and later still—after 500 BC—there was a regular intercalation of seven months in nineteen years;[7] but in the early times with which we are concerned there was no fixed interval and only when nature and the calendar were impossibly at variance was the truth checked by the stars and the government took the requisite steps; thus Hammurabi, writing in the month Ulûlu, issues his instructions, 'This year has a deficiency. The coming month shall therefore be entered as "second Ulûlu".'

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In its later form, when the intercalation of the leap months was regularized, the Babylonian calendar as a working compromise between two inconsistent principles was quite effective and must have served the needs of everyday life as well as could be desired; already, in about 1100 BC, the Assyrian Astrolabe B associates the working rules of agriculture with the names of the months and with the constellations rising about that time of year. But in earlier times although the official calendar would meet the requirements of temple ritual and of government or commercial business, yet with its irregular intercalation it was nothing like so reliable as the first visibility of the fixed stars for the farmer's purpose.

*The Lack of an Era*

The modern calendar is normally headed with the date of the year, i.e. its number in a series reckoned from a fixed point taken as the start of an era, Christian, Moslem, Jewish, etc. The Babylonians, before Alexander's conquest, had no such system, and to the lack of it is due our uncertainty regarding the historical chronology of Babylonia; we are provided with no framework for the building up of history. Each year was named after an event which took place in the course of it; the name, therefore, would normally be given only during the year or after its end; it generally referred to a military exploit or to a religious celebration as the local ruler and his priestly advisers might decide; occasionally the same name might be given to two years, and in Early Dynastic times different city states might give different names to the same year; not until the reign of Ur-Nammu of Ur (2120 BC) did the central power enforce a uniform nomenclature. Presumably a record was kept of the year-names in their due order, but if so no copy of it survives; the modern scholar may be able, largely from external evidence, to arrange the sequence of these undated years, but that in part only. It was only in the Kassite period that the Babylonian scribe revived and formally adopted the simple system which had been used by some of the *ensīs* of Lagash in the third millennium BC of dating by the regnal years of the ruler for the time being—these he correlated with the official year-name, 'Year 5; the year in which Anshan was laid waste', 'Year 8; the year in which he brought into the Sun-god's temple a great statue of copper.' But on the accession of a new ruler the count of the years started again at 1, and there is therefore no real continuity. The effect upon chronology of the lack of any system of consecutive dating is illustrated by the fact that the last of the kings of Babylon, Nabonidus, himself an enthusiast for ancient history and having at his disposal all the documentary evidence that there was, could yet state that 'Naram-Sin, the son of Sargon' of Akkad, reigned 3200 years before his own time,[8] i.e. in 3753 BC, an error of some fourteen hundred years, and even for Hammurabi of Babylon the date which he gives[9] is far from correct. The extraordinary confusion of the early Sumerian king-lists is due to the same cause. When, in the Isin period, the scribes set themselves to draw up an outline of their country's history the

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chance collection of undated and unrelated documents of which they could avail themselves defied analysis. There was nothing to show whether events were contemporary or consecutive, there was no fixed point by which dates could be reckoned, no way of estimating the length of periods, and if they chose to introduce the *šár*, the period of 3,600 years, the square of the 'big unit' which was the basis of their sexagesimal system of arithmetic, that was a literary convention which had nothing to do with history. The lack of any sequence-dating of the years would not have been noticed by the makers of the calendar nor did it concern them; they were not constructing a historical skeleton; their aim was to meet the interests of the priest, the farmer and the economist by framing an instrument which might regulate the essential activities of those professions month by month and day by day within the limits of the year, and men asked of a calendar no more than that.

*Egypt*

In Egypt, as in Mesopotamia, the farmers and the priests, and later on the business men also, required a timetable to regulate their activities, and a calendar therefore was formulated at a very early date; the Pyramid Texts appear to show that it was in full working order before 2400 BC, and it continued in use until the Roman period.

The Egyptians had the advantage that the rise of the Nile, with its promise of renewed life after earth had been parched into sterility by the heat of summer, recurs with astonishing punctuality; for an agricultural people it was the greatest seasonal event of all, and a natural start from which time could be reckoned. No very prolonged observation was needed to establish the fact that the average length of the period between inundation and inundation was 365 days. This, then, was taken as the year, a Nilotic year which had nothing to do with astronomy. It began with the river's rise about what in the Julian Calendar is July 19th and the first of the three seasons into which the year was divided was named 'the Inundation Season'; the name indicates that the calendar was introduced at a time when the beginning of this 'season' did really coincide with the rise of the flood-water.

The three seasons of the year consisted of four months each, and each month consisted of 30 days. It is quite clear that the months did not determine the year's length; that had been fixed before, and independently by observation of the Nile's rise, and the months had to be accommodated to the year. Originally they were lunar months, and the actual length of a lunar month is 29·53 days. That the Egyptians knew this is proved by the fact that in a papyrus from Illahûn the entrances of the *phyle*-priests upon their duties are set down for alternate periods of 29 and 30 days, which can only mean that their monthly service depended upon lunar reckonings; their count of 30 days to every month was therefore quite unrealistic, and it is difficult to suppose that it was other than a purely numerical adjustment, 30 being the maximum flat rate for 12 months in a 365-day year. Because

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the total for the standardized months was only 360 days, there were added to it five 'epagonal' days which were celebrated as the birthday festivals of the five principal deities and were *dies non* for business purposes—they were in the year but not of it, and were quite deliberately disregarded, as in the explicit statement[10] 'Behold, a temple-day is the $\frac{1}{360}$th part of a year'. By this somewhat naïve convention of important but non-existing days the numerically schematized division into months and the discordant facts of nature were brought into harmony in one and the same civil calendar.

The possibility that there existed, side by side with the civil calendar, a second calendar which was purely lunar in character and origin is a matter on which Egyptologists are in disagreement.[11] The Illahûn papyrus quoted above indisputably proves that the monthly service of the priests depended upon lunar considerations, but the papyrus dates these varying lunar intervals by means of the civil calendar; there are calendaric tables, such as the Ebers Calendar, in which lunar dates are reduced to civil dates, and similar double-dating occurs in several documents. These facts are taken as evidence of a lunar calendar used simultaneously with the Nilotic Calendar; but it must be admitted that in the Ebers Calendar the months are not of alternating length as lunar months should be and as they are in the Illahûn papyrus, and there is nowhere any suggestion of the intercalary month which a lunar calendar should contain. It is the case that various temple festivals were fixed by reference to the moon, and consequently the occasions of them would in different years fall upon different dates in the civil (non-lunar) calendar, so that the priests would require tables of cross-reference. That such tables existed is evident, but their existence does not necessarily imply that there was a regular lunar calendar in use. In England today the Church of England Prayer Book gives elaborate tables for the finding of Easter in any year, and those are based upon the lunar reckoning of the Jewish (and ultimately the Babylonian) system; but it would be absurd to conclude from this that England normally uses two calendars. In Egypt the tables of cross-reference were made essential by the shortcomings of the civil calendar.

It would be too much to expect of those observers who at the dawn of history recorded each summer the rise of the Nile waters and counted the days that elapsed between the floodings, that they should have been more meticulously accurate than their practical purpose required. In any case, a year had to consist of a definite number of whole days, and they arrived at the right number, so that the Egyptian year had 365 days just as do the years of today. The later Egyptians realized that $365\frac{1}{4}$ was nearer the truth (which is that the solar year has 365·2422 days), but the early Egyptians certainly did not, and therefore the need—and the possibility—of inserting as we do an intercalary day once in every four years never occurred to the authors of the calendar. Their calendar, therefore, was progressively inaccurate. In Mesopotamia, as we have seen, the discrepancy between the calendar and the seasons became so quickly obvious that steps to correct it were

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soon taken; but in Egypt it would be long before the discrepancy was noticed at all. Regular as the Nile's rise is, it does not necessarily begin on exactly the same day every year, and if the calendrical New Year's Day were even as much as a week out by reference to the flood the farmer would not be seriously upset; but with every year the error became more palpable, and although it took over 1,460 years for New Year's Day to box the compass of the seasons yet long before that happened the calendar had become topsy-turvy and its 'Inundation Season' a ludicrous misnomer.

The Egyptians of the time in which the calendar was formulated could not possibly have foreseen this, but as the calendar, by almost imperceptible degrees, got more and more out of relation to the march of the seasons, they could not fail to recognize the fact. But at a very early date they remarked that the heliacal rising of Sirius (which they called Sothis) took place just before the Nile flood was due[12] and they associated the two portents—an ivory tablet from a First Dynasty tomb at Abydos hails Sirius as 'Bringer of the New Year and the Inundation'. Sirius was even more dependable than the Nile, and in due course, therefore, was adopted as the proper check upon the calendar.

This is the origin of the 'Sothic cycle' of 1,460 years which has played so large a part in the chronological speculations put forward by Egyptologists.[13]

The Greek mathematician Theon of Alexandria records that a 'Sothic cycle' started in the year 139 AD (i.e. in that year the rising of Sirius coincided with the first day of the calendar year), and remarks that before that it had been 'the epoch of Menophres', i.e. of Ramses I; since Ramses I was on the throne in 1321 BC, which would be the first year of a 1,460-year cycle ending in 139 AD, the evidence would seem to fit perfectly. The two preceding cycles will then have begun in 2781 and 4241 BC respectively. Whether the calendar was introduced in the neighbourhood of the one or the other of these dates is still a matter of dispute.

It should be emphasized that the Sothic cycle results not from the heliacal rising of Sirius but from the imperfection of the Egyptian civil calendar. That imperfection would be noticed only one or two centuries after the calendar had come into use, by which time any record of its beginning would possibly have been lost. Moreover, to discover the cycle of 1,460 Sirius years, systematic observation and recording of the date of risings of Sirius during many years would be necessary. It is even possible that the cycle was not discovered before Greco-Roman times. Whereas some writers have not hesitated to assume that the Egyptian year was from the outset a solar (or, more correctly, a sidereal) year based on observation of the rising of Sirius and have even gone so far as to postulate a 'Sothic Calendar' existing from the beginning side by side with the civil calendar in general use, it is quite certain that no such calendar did or could exist. In the whole of Egyptian literature there is no reference to a Sothic cycle earlier than that of Theon cited above, and, as Neugebauer has pointed out, the Sothic cycle has nothing whatsoever to do

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with ancient Egyptian chronology. The 365-day year was not a solar or a sidereal but a Nilotic year; the rising of Sirius, an important event from the religious point of view and one which coincided in theory at least with the start of the official calendar, was used as a check upon its vagaries. Thus when a scribe notes that in the seventh year of the reign of Sesostris III Sirius rose on the sixteenth day of the eighth month (Pharmuthi) he presumably does so because it happened to be of interest to record at what season of the year an event occurred, and the calendar date by itself would have been uninformative on that point. Apparently this was the reason why in the Ebers Calendar calendral dates are referred to the Sothic rising, for certain medical prescriptions were dependent upon the seasons, and consequently the practitioner needed guidance if he was to carry out properly the instructions given in his pharmacopoeia.

It might be asked why, if the Egyptian recognized quite early that his calendar was at fault and also learnt in time that this was due to the inexact estimate of the year's total length, he did not take steps to correct the anomaly. In the first place, the Egyptians were a religious people and may well have been prevented by religious conservatism from tampering with an order immensely ancient and manifestly originated by the gods. Secondly, the practical inconvenience involved was not so great as it appears to the precise judgement of the modern scholar. For the bulk of the population of the Nile valley what mattered was the inundation. There the calendar did not help, but the priests who observed the rising of Sirius would give advance notice of the flood, and a more immediate warning came from the office of the vizier, to whom reports were sent by the watchers of the Nilometers in the extreme south. With that, the farmer's year began, and thenceforward his activities were directed by the familiar routine of the seasons; the official calendar was something that concerned the palace, the temple and the law court, but the farmer did not need it to teach him his business. The priest, on the other hand, had to meet the problem of the religious festivals. Each calendar month was distinguished by a temple festival occurring in the course of it (the month-names and the festival names are often identical), and since the months shifted in relation to the seasons of the year[14] the times of the festivals shifted also. But certain festivals, including some of those that gave their names to the months, were really seasonal, and therefore the difficulty arose that a feast definitely associated with, for instance, the rebirth of life in springtime, might by the calendar be assigned to the dead days of midsummer. The problem was solved, simply and easily, by duplication. The Egyptians distinguished between 'festivals of the times', those celebrated on the dates given by the calendar, and 'festivals of the heavens', which were irrespective of the calendar and were fixed by seasonal or astronomical events; the two might be identical, and for the priesthood this multiplication of feast-days would be not without its advantages. When, as early as the Fourth Dynasty, we hear of two New Year's Days, one called 'The First of

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the Year' and the other 'The Opening of the Year', there is here no confusion nor yet reason for surprise. The 'First of the Year' was the calendral New Year's Day as laid down by the law; separated from it by a varying time-gap was the rise of the Nile (and of Sirius) which for the agriculturalist was the opening of his working year, ordained for him by the facts of nature.

*China*

Until quite recently it was not possible to make any definite assertions regarding the calendar of the Shang Dynasty. But now the position has been changed greatly. The study of the material from the site and tombs of Anyang, in particular of the 'Oracle Bones' which number over 100,000, but also of the inscribed bronze vessels and of *graffiti*, has thrown entirely new light upon the problem. Because a date may be essential to the required prognostication, the oracles are often dated accurately by months and years, a fact which obviously proves the existence of a calendar. The details of the dates, the terms used, and the references to lunar eclipses and to the solstice further make it evident that the calendar of the Shang period—or, at any rate, of the late Shang period after the capital had been moved to Yin (Anyang)—was closely connected with Chinese calendars of subsequent times. In the Han period we are given a list of the 'Six Calendars' which includes the 'Hsia Calendar', the 'Yin Calendar' and the 'Chou Calendar', and although the complete description of these is lost yet references to them in other works suffice to prove that all alike have the same basic principle as the *Ssu-fen* or 'Quarter-day Calendar' of the Eastern Han Dynasty regarding which more will be said hereafter; what matters for the moment is that the 'Six Calendars', described by scholars of the West Han period, include three which are expressly attributed to earlier dynasties, two of them falling within the ages wherewith this volume deals.

According to Professor Tung Tso-pin[15] (whose views are not accepted by all scholars) the Shang Dynasty used the Ssu-fen Calendar, which he describes as follows: It was a mixed lunar-solar Calendar. The day started with sunrise. The months were lunar and started not after the first appearance of the new moon, as was the case in Mesopotamia, but after the previous night, when there is no moon at all; this more scientific definition of course implies careful observation of the phenomena. The month consisted of either 29 or 30 days; there is reason to think that the exact length of a lunar month had been worked out at 29·5305106 days, approximately the same figure as the modern calculation of 29·530585 days.

The year consisted of 365 days. Its true length had been worked out at 365·25 days, which again is a remarkable approximation to the truth. Twelve months went to the year, the necessary number of days being completed by the use of intercalary months. The year started in the spring, but the First Month was not the same for all calendars.

The last point is of importance as bearing on the date of the inception of

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the Chinese calendar. The 'Question of the Three Primes', i.e. the question whether the first month of the year should be identified as the month *tzu*, the month *ch'ou*, or the month *yin*, was raised by the Han Dynasty writers, who agreed that there were three such different systems and attributed them to the practice of the Chou, the Shang and the Hsia Dynasties respectively. This tradition had been discredited by modern historians; but the oracle bones prove conclusively that in the Shang period the year did start with the month *ch'ou:* for the Chou period a number of calendral notices survive, but in them there is no case of a 'Prime' month which does not contain the winter solstice, which is the typical feature of a *tzu* month: the obvious deduction is that tradition was right in its third attribution also, and that assumption is supported by the definite statement of the Tso Chuan, a commentary on the early Chou 'Spring and Autumn Annals'. That there was a Hsia Calendar would therefore seem to be a not unreasonable assumption.

According to the oracle bones the intercalary month was, in early times, placed at the end of the year as 'the thirteenth moon'; this is mentioned, for instance, on an inscription (now in the British Museum) which records a lunar eclipse in the twenty-ninth year of the reign of Wu-ting, November 23, 1311 BC. Soon after this, by the reforms introduced by the Shang ruler Tsu-chia (1273–1241 BC), the intercalation was made immediately after any moon whenever the difference between the solar year and the lunar year was seen to amount to a substantial number of days. Thus, for example, in the tenth year of Ti-hsin (1165 BC) an intercalary month of 29 days was inserted at the end of the ninth month and was entitled 'the ninth'. This intercalation was not merely a makeshift expedient arbitrarily adopted to correct an obvious error; it was, on the contrary, the application of a principle which had been worked out on the basis of scientific observation as set forth in the Ssu-fen Calendar of the East Han Dynasty. The purpose of that 'Quarter-day Calendar' was to reconcile the solar year of 365¼ days with the 'common' year of 365 days; the solution found was to insert seven intercalary months in each period of nineteen years. The Chinese calendrist, therefore, recognized time-units longer than a year, namely the *chang* or 'chapter' of 19 years or 235 moons, and the *fu* or 'cycle' of 76 years or 940 moons or 27,759 days. At a later date longer units, the *chi* and the *yuan*, were introduced, but they were purely theoretical, invented to conform to the sexagesimal system, and do not concern us here; and until quite lately it was reasonable to maintain that the *chang* and the *fu* also could not be earlier than the Han period, so that any supposed connection between the Ssu-fen figures and the Six Calendars of Han tradition must be an anachronism, the Han writers having attributed their own knowledge to their remote ancestors. But an inscribed tortoise-shell found at Anyang in 1936, dated to the reign of Wen-wu-ting (1222–1210 BC), proves the case. A piece of farm land was to be let for 548 days (the text says 547, but since the day of divinition was not reckoned in the total at the time when this oracle was written, we should read 548) starting at the winter



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solstice and ending at the summer solstice of the following year, i.e. for exactly one-and-a-half years. If the 'years' in question were 'common' years of 365 days the figure of 548 is as much as half a day out; but if they were solar years, put by the Ssu-fen at 365¼ days, then the year-and-a-half (365·25 plus 182·625 = 547·875) is in practical agreement with the 548 of the text. This, as Professor Tung insists, cannot be mere coincidence, and in itself[16] amounts to proof that the Yin Calendar, i.e. that in use when P'an Keng moved the capital of Shang to Yin (Anyang) in 1384 BC, was based upon the Ssu-fen figures, which again could only have been arrived at after prolonged observation and study. The conclusion, then, is that the Ssu-fen Calendar, having as its basic feature the *chang* unit of 19 years or 235 moons (228 lunar months of 29–30 days plus 7 intercalary months) anticipates by more than a thousand years the famous Metonic Cycle, the solution to the same problem of reconciling the lunar and the solar years, which was promulgated in Mesopotamia in the Hellenistic period. The longer *chang* unit of 76 years (4 *changs*), the reason for which would seem to be that it was a period sufficiently long to allow for accurate observations to be made of the effect of the 19-yearly intercalations,[17] corresponds to the 'Period of Calippus' of the Hellenistic scholars. While we are not justified in denying absolutely to the Greek and Babylonian astronomers the credit of an independent origin for the Metonic Cycle, we are none the less bound to admit that by the second millennium BC the Chinese calendar had been framed with a scientific accuracy which neither Babylon nor Egypt could rival.

It is perhaps strange that, having achieved such precision with the Ssu-fen system as Professor Tung claims for it, the Chinese should, in later ages, have persisted in calendral reform. Some of those efforts were but theoretical exercises, but the result was that throughout most of their history they recognized two quite separate official calendars, one for the peasant, which followed the seasons, and one for the scribe, which was a pure—perhaps pedantic—number-system.[18] But the duplication seems to have been due not to ignorance or incompetence but to reasons of political or social convenience: in later time the rise of a new dynasty regularly involved a re-casting of the calendar.[19] Indeed, in the case of China, as in that of Egypt, we have to remember that the social utility of a calendar is its primary *raison d'être*, and its scientific accuracy is, for most people, a secondary consideration; inconsistencies, however glaring in theory, are accepted with equanimity by a public habituated to them.

In the Western world of today only the extreme purist would object to the ninth, tenth, eleventh and twelfth months of the year being named the seventh, eighth, ninth and tenth, September, October, November and December. The irregular length of February is the cause of jesting, not of worry. Few complain because the dates of the two chief religious festivals, together with the civil holidays attached to them, are not fixed; that Christmas falls every year on a different day of the week because the number of days

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in the year is not divisible by seven, and that Easter may shift its date by as much as a calendar month because it is based on a lunar reckoning entirely alien to the calendar. So conservative is man in this respect that calendral reform in England was opposed by rioters shouting 'Give us back our eleven days', and in Greece and in Russia (until 1918) was blocked by the religious objections of the Orthodox Church. The Egyptian calendar, which fixed absolutely the duration of the month and of the year, was far better calculated to serve administrative purposes (from the government's point of view its real object) than was the Babylonian calendar with its irregular intercalations and months of different lengths, and for the same reason it was preferred to any other by later astronomers such as Ptolemy.

## ASTRONOMY

In the discussion of the calendars it has been pointed out that astronomical observations helped the calendar-makers in their task; particularly in the case of Egypt we have seen that the heliacal rising of Sirius was adopted as a check on the civil calendar. Conversely, the need of a calendar, in Egypt and elsewhere, encouraged observation; and a motive equally practical in the eyes of ancient man was supplied by the religious awe with which he looked upon the heavens above him. That being so, it is incumbent upon us to enquire into man's achievement in astronomical science during the period which ends with the close of the second millennium BC.

The enquiry is the more necessary because popular opinion has mistakenly ascribed to the Mesopotamians and still more to the Egyptians a profound understanding of astronomical phenomena. It is indeed a fact that various buildings in Egypt and elsewhere were oriented on heavenly bodies; and to people for whom those bodies have no particular significance this seems to be a mysterious fact implying scientific knowledge of a very abstruse sort. It really implies nothing of the kind; it is simply the result of careful observation of what could not safely be disregarded. Mere observation of the heavenly bodies, if carefully maintained, will suffice to show that their relative positions change and repeat themselves in a definite space of time, and such movements can be related to the agricultural seasons or may themselves determine the times for religious celebrations. The sun, the moon and the planets were gods who, as such, directly influenced man's fate. Civil life depended upon the regular succession of days and months and years, all of which are fixed by the course of the sun and the moon, and similarly the gods moving about in the upper spheres bring peace or war upon earth, destruction or prosperity; their movements, therefore, must be watched and, if possible, interpreted in the light of experience or analogy. Consequently from a very early time such phenomena were observed and recorded, but that is not the same as saying that astronomy begins early; men's interest in the celestial bodies was calendral on the one side and astrological on the other. Professor Neugebauer has

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defined the matter succintly and authoritatively: 'Astronomy does not originate with the recognition of irregular configurations of stars or the invention of celestial or astral deities. Scientific astronomy does not begin until an attempt is made to predict, however crudely, astronomical phenomena such as the phases of the moon.' That attempt came later. The lunar month, i.e. the time required for the moon to pass through all its phases, is so obvious a unit that it can be determined by the most primitive people on the strength of watching for no more than a single year, but this gives an approximation only which in Egypt, all through the Bronze Age, was checked by actual observation of the waxing and waning moon; only in the course of the first millennium BC did Babylonian astronomers succeed in *predicting* the lengths of the lunar months and it was only from Babylon that the Egyptians subsequently acquired such knowledge.

The advance from observation to prediction was really made impossible for the Egyptian by the elementary character of his mathematical system, which could not cope with the elaborate calculations demanded by astronomy. It would appear that having once obtained, by very simple observations, the agricultural and ritual data necessary to an ordered life, he had no urge to pursue the matter further. Thus we find in the Egyptian texts no reference at all to lunar eclipses;[20] such must presumably have appeared to the Egyptian as isolated events due to some supernatural cause and therefore incalculable and having nothing to do with the regular course of things. From China we have, in one Anyang bone inscription, a very early record of an eclipse which took place 'on the fifteenth day of the twelfth moon of the twenty-ninth year of King Wu-Ting', i.e. on November 23, 1311 BC,[21] which shows an interest, and possibly a knowledge, antedating anything of the sort in Egypt. The inscription by itself is insufficient to prove that the interest went beyond the recording of a striking phenomenon, and the fact that the record figures in an oracle text may well raise doubts as to its scientific value. But in the Chou records we are told that in the thirty-eighth year of the reign of the Shang 'emperor' Ti-hsin (1137 BC) the Chou ruler Chou-wen-wang ordered a sacrifice to be offered because 'the eclipse happened not on the right day': it occurred on the sixteenth day of the month, according to the calendar, instead of on the fifteenth. This, if the construction put upon it be correct, surely implies that as early as the twelfth century BC Chinese astronomers were able to calculate the lunar eclipses in advance, and that with such confidence that an error of twenty-four hours was enough to alarm the authorities. The Anyang inscription may possibly imply similar knowledge two centuries earlier.

On the other hand the Mesopotamian omen texts, which go back as early as the First Dynasty of Babylon, *c.* 1800 BC, base many auguries upon lunar eclipses, according to the day and the month of their occurrence, and this must mean that such phenomena were duly remarked and recorded, but the only explanation of the eclipse was that the Moon god was being attacked by

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evil demons, an explanation which for long precluded any attempt at prediction. The Late Babylonian astronomical tablets give tables for the prediction of lunar eclipses—purely mathematical computations not involving any general hypothesis concerning the mechanism whereby eclipses were brought about—but they date from about the third century BC and although they must be the product of much previous observation and study they afford no reason to believe that systematic operations started before the eighth century BC.

The Babylonians, possessing a mathematical basis for astronomical calculations much superior to that of the Egyptians, made far greater progress in the astronomical field and started at quite an early date to amass a *corpus* of information which would ultimately supply the material for science. The earliest computations were concerned with (*a*) the duration of day and night in the different seasons, (*b*) the rising and setting of the moon, and (*c*) the appearance and disappearance of Venus. From the time of the Third Dynasty of Ur (*c.* 2100 BC) onwards the omen texts, which combine astrological forecasts with astronomical observations, prove the careful attention paid to astral phenomena.[22] Thus the sixty-third tablet of the great astrological series 'Enuma, Anu, Enlil' which was put into shape between 1400 and 900 BC, contains a list of the heliacal risings and settings of Venus during twenty-one years of the reign of Ammizaduga; the observations must have been made at the time, i.e. in the late seventeenth or early sixteenth century BC. But what we have here is simply observation which was carefully conducted over a considerable period; it does not involve any scientific theory.

Further evidence that interest in the stars began in early times can be got from the (late) star-lists. In the Epic of Creation, which unquestionably goes back in all essentials at least to the beginning of the second millennium BC,[23] it is said, 'Marduk fixed three stars' (or 'constellations') 'for each month of the year'. Now in other texts there are lists of the thirty-six stars described as 'the Stars of Ea, the Stars of Anu, the Stars of Enlil', twelve of each, corresponding to the twelve months of the year, so that there are indeed three stars for each month. Again, there are lists of 'Stars of Elam, Akkad, and Amurru', one star for each country and each month, and the three stars for every month given in these lists are identical with the 'Stars of Ea, Anu and Enlil' for the same month. The territorial divisions agree with the political conditions of Old Babylonian times, and it would appear that in drawing up the threefold lists for the use of the unified realm the scribes incorporated local lists of pre-First Dynasty date.

But while it may be assumed that even before the collapse of ancient Sumer the different areas of Mesopotamia had already classified the calendar stars which in each of them served as timekeepers for priest and farmer,[24] none the less we do find that not until the latter part of the second millennium were there developed the more speculative views which are forthcoming in the Assyrian astrolabes from which the star-lists are taken. A much later list,

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the MUL Apin list, gives the thirty-six heliacally rising stars together with the date differences of the brightness of them; the actual text is of the seventh century BC, but Professor van der Waerden has calculated that the observations on which the list was based must have been made between 1300 and 900 BC, i.e. in the latter part of the second millennium; 'the differences between text and calculations were so small', he says, 'that we are bound to conclude that the observations were made with considerable care, probably over a period of several years', and this degree of accuracy surely suggests a genuinely scientific curiosity. 'The results show that not only was the period 1400–900 BC the classical period of omen astrology, but that there were scientific astronomers at work as well, making careful observations of the annual rising and the daily rising, setting and culmination of fixed stars. Still, our knowledge concerning this period is rather limited. We know for certain only the following facts: (*a*) the composition of the great omen series, "Enuma, Anu, Enlil"; (*b*) the accurate observation of the heliacal rising of stars; (*c*) the observation of daily rising, setting and culmination; (*d*) the composition of the astrolabes before 1100 BC. Moreover, we can ascribe to this period with a certain degree of probability (*e*) a very primitive representation of Venus phenomena by arithmetic series and constant differences between successive phenomena; (*f*) the computation of daylight and night by means of rising and falling arithmetic series, starting from the crude extreme ratio 2:1; (*g*) the computation of the rising and setting of the moon by means of rising and falling arithmetic series (this is found in the fourteenth tablet of the great omen series, but may go back to our period); (*h*) speculations on the distances of fixed stars. This last, based on a much-discussed tablet from Nippur which is certainly earlier than the eleventh century BC (the "Hilprecht tablet") is really only a mathematical problem-text of a normal type except that star-distances are used instead of the more usual weights or money-amounts; it represents the pre-scientific stage of Babylonian astronomical speculation, not the beginning of scientific astronomy; but at least it shows that the Babylonians had already recognized that the stars were at varying distances from the earth (not fixed to a uniform empyrean as primitive belief would have it) and that those distances might conceivably be measurable.'

The evidence that we possess justifies us in saying that by 1200 BC in Babylonia the foundations of real astronomical research, as that is defined by Professor Neugebauer, had been well and truly laid. Further it appears likely, though it cannot be definitely affirmed, that already the first tentative steps had been taken in the direction of scientific thinking over the data which careful observation had amassed, and that certain rather crude and elementary results had been achieved which in the course of the following millennium would be developed into the astronomical science inherited by the Greeks.

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## SURGERY AND MEDICINE

The peoples of the Bronze Age, like their descendants in the Middle Ages and like not a few persons at the present time, considered that aches, pains and diseases were caused by the gods, or by evil spirits, and might even be due to 'possession', the demon having entered into and taken physical possession of the sick man's body. Medicine therefore went hand in hand with religion, or with magic, and although drugs were to be used yet their efficacy might consist rather in their unpleasantness to the possessing demon than in any directly beneficial action on the body. In most ancient techniques prayer and sacrifice played their part, but with medicine they were most intricately concerned, because here the doctor might be called upon not merely to placate a god but to defeat a malignant power. Where, on the other hand, the trouble was due to human agency or to palpable accident, as in the case of wounds incurred in battle or of broken limbs, there was less need of exorcism or charms, and though the patient might profit by prayer the operating surgeon relied upon his own skill and professional traditions.

### *Surgery*

In Mesopotamia there is not much evidence to show what progress had been made in surgery by the end of the second millennium BC. The Code of Hammurabi, which dates from about 1780 BC, but may be re-casting clauses taken from some much older code, fixes the fees to be paid 'if a doctor has treated a gentleman' (or a poor man, or a slave) 'for a severe wound, with a bronze lancet, and has cured the man; or has opened an abscess of the eye with the bronze lancet and has cured the eye', and again, 'if a doctor has cured the shattered limb or the diseased bowel'. From this it may be gathered that surgical operations of a fairly serious character were regularly performed in Sumer and Akkad; but as the code goes on to say that if, in the first case quoted above, 'the doctor caused the gentleman to die' or 'caused the loss of the gentleman's eye, one shall cut off his hands', it would appear that in a really difficult case the patient's chances of a cure were not very good. The purpose of the law was not simply (as might be supposed) to ensure a high level of practical skill by penalizing the quack or the careless; rather was it to preserve the reputation of the profession. Surgery and medicine were divine functions—in Mesopotamia they were exercised by the goddess Bau—and where deity was involved there must be no failures; if such did unfortunately occur they must be attributed to the fault of the human agent, and the divine omnipotence must not be called in question. Hammurabi's condign sanction would naturally stop any surgeon from operating except in cases where he was confident of success; and it is therefore in harmony with the Babylonian medical rule, which we find several times repeated, that a physician must not prescribe for a patient who was certainly going to die, nor for any disease which, like leprosy, was considered incurable. But because so severe a

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punishment for failure would discourage any idea of experiment it would undoubtedly block the road of scientific progress, and it is therefore not surprising that up to the end the Babylonian's knowledge of anatomy appears to have been very slight.

In this respect he was surpassed by the Egyptian, who had the advantage that the elaborate process of embalmment which religion demanded gave him every opportunity of studying the human body. The fact that over a hundred anatomical terms occur in the texts is proof that the Egyptians had learnt to distinguish a great many organs and organic structures which their Mesopotamian contemporaries failed to recognize, and for the gross anatomy of the body their terminology is fairly accurate. On the other hand, the nerves, muscles, arteries and veins are all denoted by one and the same word; these they had entirely failed to understand, regarding them all as parts of a single system forming a network over the whole of the body; when we find that there is no verbal distinction between the blood-vessels communicating with the heart and the leg-muscles that have to be treated in cases of rheumatism we must realize how curiously limited was the Egyptian knowledge. The preparation of bodies for embalmment had taught them that the brain is enclosed in a membrane and that its surface is patterned with convolutions, and experience with accidents had shown them that injury to the brain may cause a loss of control over various parts of the body; yet to the brain they attached very little importance. For them the most important organ was the heart, so much so, indeed, that in the process of mummification it was not removed together with the rest of the viscera but was carefully left in its place in the thorax: 'The beginning of the science of the physician', says the Ebers papyrus, 'is to know the movement of the heart and to know the heart; there are vessels attached to it for every member of the body', as can be seen from the sympathy of the pulse in various parts of the body with the beating of the heart itself. But the description in the same papyrus of the functions of the 'vessels' as the vehicles not of blood but of air, water, mucus, semen and other secretions betrays complete ignorance of the working of the living body.

The sections of the Egyptian medical papyri that deal with such purely surgical matters as wounds in the head and thorax, fractures, boils and cysts, affections of the stomach and gynaecological troubles are very much more scientific in their approach than are those concerned with medicine, and it is obvious that familiarity with the body had given to the surgeon a confidence which the doctor could not share. The texts have, for each case, formulae arranged in regular order—a title, the symptoms to be observed by examination, the diagnosis, the opinion as to whether a cure was possible or not, and finally, if a cure were thought possible, the treatment required. Further evidence of methodical surgery is afforded by the character of the papyri generally: thus the Kahûn Papyrus, which dates from the Twelfth or Thirteenth Dynasty but is derived from an older original, deals only with gynaecological troubles; the Chester-Beatty Papyrus (of Nineteenth Dynasty

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date) only with affections of the anus and rectum; the Edwin Smith Papyrus almost entirely with wounds and fractures, and each long section of it is concerned with a specific organ or region. Whereas, then, we have no literary sources from Mesopotamia to inform us of the methods of surgery in that country, Egypt provides a quite remarkable wealth of such, and the mere fact that the knowledge acquired by experience and experiment was thus systematically put on record would seem to imply a standard of practice greatly superior to the cautious empiricism of the Babylonian surgeons which could not be rationalized into a code. None the less must we be careful not to overestimate Egyptian surgical science. Not only do the texts show that the functions of the living body were fundamentally misunderstood, but accompanying or interspersed with the surgical formulae there are in the texts the medico-magical recipes and incantations which bring us back to the primitive beliefs in the curse, the evil eye and possession by devils.

*Medicine*

It is curious that the earliest Sumerian medical text, a tablet dating from the latter part of the third millennium BC, is altogether free from mystical and irrational elements. On the other hand, a hymn to the goddess Ninisinna or Bau, of about 1750 BC, calls her 'the great doctor of the black-headed [Sumerian] people' who had charge of the divine laws set up before the creation of the world for the art of healing; it attributes the diseases to demons, and the cures consist primarily of incantations. In Sumer and in Egypt alike, the art of the physician was inseparable from the 'oral rite' and the 'manual rite' of the magician.

*The Pharmacopoeia*

In the Sumerian language the same word, *šammu*, means both 'vegetable' and 'medicine'. Of the medicinal compounds for which the recipes are given the vegetable ingredients are by far the most numerous; thus, out of some 550 species mentioned 250 are vegetable, 120 are mineral and the animal or unidentified substances total 180; but what really matters is not so much the number of plant ingredients used as the frequency of their occurrence in the recipes, and out of 5,880 occurrences no less than 4,600 are of vegetable origin. To these must be added a few substances in common use which are vehicles for drugs rather than drugs in themselves—alcohols of various sorts made from grapes, beer, fats, oils, wax, honey and milk.

Apart from actual recipes there are Assyrian tablets which list the plants supposed to possess medicinal properties, as well as purely botanical lists which are much fuller and include the plants of no use to the doctor. The differences between the lists show that the drugs were not selected at random; Campbell Thompson indeed insists that the more they are studied the more obvious becomes genuine knowledge possessed by the doctors and chemists of Nineveh, which knowledge was, of course, the result of many generations of

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experience. Thus, for narcotics they used opium (made from three varieties of poppy), hemp, belladonna, mandragore and water-hemlock—the last a very poisonous drug; for stomach troubles camomile is recommended, as also is rue; mustard in water is an emetic, the seeds swallowed whole act as a laxative, and it makes a good poultice; hellebore was so important both for external and for internal use and as a fumigant that there is even a poem about it; rose-water, sometimes imported from Iran but also manufactured in the temples of Babylonia, was an expensive drug with many uses, almost a panacea. These and the like are the 'simples' that have been used by different peoples at all times; experience had proved their efficiency in certain cases, and many of them still find a place in the pharmacopoeia of the modern herbalist. But one's confidence in the acquired knowledge of the ancient physician is shaken by the heterogeneous properties which he attributes to one and the same drug; thus *imhur-pani* (probably the marigold, *calendula officinalis*), is recommended in the form of an unguent for scorpion-stings, toothache, as a head-wash and for the ears and eyes; in the form of a drink, for jaundice, snake-bite, dyspnoea, stomach troubles, venereal disease and possession by a ghost. This last prescription shows how closely the old pharmacopoeia comes to magic, and how little it is based upon any real scientific knowledge; rather is it true that where experience has proved the curative value of some herb for a particular ailment, this was regarded, by a people totally ignorant of physiology, as a magical virtue inherent in the plant which must therefore be generally efficacious. Nor is such virtue necessarily inherent in the nature of the plants themselves; as likely as not they may owe their power, at least in part, to magical conditions, to the place of their growth or to the time of their gathering; thus for certain diseases the roots of the thorn-bush specified in the recipe must have come from above a grave, while for others it must have been dug up before sunrise—'slips of yew Sliver'd in the moon's eclipse'. The animal elements remind us even more closely of the concoctions of Shakespeare's witches—swine's head, tongue of mouse, hair of dog, hair of fox, fat of a black snake, milk of a white cow, eye and blood of a hen; all of them are clearly more magical than medicinal; and just as the mediaeval doctor held that 'Gold in Physick is a cordial', so his Babylonian predecessor mixed in his drugs not only verdigris but powdered copper, haematite and lapis lazuli, crushed terra-cotta and dust collected from the ruins of some deserted house or temple. The various ingredients had to be carefully prepared. Some plants were pressed to extract the sap; more often they were dried and powdered in mortars and then mixed and decocted in water or in fat, the process being repeated several times if necessary. The proportions of the different substances are seldom specified in the recipes but are left to the judgement of the working chemist.

A doctor was well advised to administer his drugs at night-time, or just before sunrise. The drugs might take the form of ointments for external application, often in combination with massage, or of pills or potions to be

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taken through the mouth; but it might suffice to powder the drug and sprinkle it over the ailing part or to wrap it in a piece of goatskin and lay it over the place (possibly a poultice is here meant) while for fever a mixture of the proper herbs might be burnt over a fire of thorns and the sick man's head fumigated therewith. We are assured that the mere 'smell' of pulverized copper (presumably inhaled through the nostrils) will relieve all the pains of childbirth, and that the laying of a spangle of red gold in a man's hand will cure him of jaundice. But side by side with this sympathetic magic there is a great deal of common sense. 'For feverish headache, half a measure of mustard pounded and filtered and kneaded with rose-water, to be smeared over the patient's head and secured with a bandage; the bandage to remain undisturbed for three days'; such a prescription is typical of the lore of the 'wise woman' of all times. The Mesopotamian doctor fully recognized the importance of the free action of the bowels, and was quite prepared to administer an oil enema, and for digestive troubles he had various methods of inducing vomiting; he realized that by such means the pain of internal diseases could be lessened, and he would follow up the more drastic treatment with a milk cure or an ordered diet. But he lacked any more thoroughgoing knowledge of the real nature of disease. For one and the same malady a dozen or more different prescriptions are recommended, and in the event of one failing the physician is told to try another and yet another, the choice having apparently no relation to cause and effect; there is here nothing that can be termed science, only an unco-ordinated empiricism based on experience of a very superficial kind.

Exactly the same is true of Egypt. The medical papyri will list a number of remedies and either leave the choice to the physician or instruct him to try one after another. The remedies themselves were of the same type as the Mesopotamian, with vegetable ingredients predominating, but the mineral ingredients were here more varied and of greater real curative value; the Egyptian chemist used nitron (a natural mixture of sodium carbonate and sodium bicarbonate), several alkalis, salts, alum, etc., and his prescriptions may well have been more efficacious than those dispensed by his Babylonian contemporary. None the less, magic played an even more prominent role in Egyptian than in Mesopotamian medicine. In the papyri the recipes for drugs are regularly interspersed with the magical spells which were supposed to make the drugs more effective. These spells are what has been called the 'oral rite', and they are usually followed by instructions as to the performance of the 'manual rite'; the magical formulae had to be recited with appropriate gestures over some object, a clay or wooden image, a string of beads, an amulet, a knotted cord or a stone, and the charm thus charged with power would be attached to the patient's body; or, again, the drugs themselves might be so charged and given to the patient to swallow; in the latter case they might contain particularly noxious ingredients calculated to drive the possessing demon out of the man's body in sheer disgust. If the Sumerians

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employed the same words (*azu* and *iazu*) for physician, seer and scribe, showing thereby how closely associated were the functions of the three professions, the Egyptians went still farther towards identifying the arts of medicine and of magic.

*The Commonwealth of Medicine*

Just as the papyri may deal specifically with different categories of disease so, too, there tended to be a certain amount of specialization in the medical profession. Hammurabi's Code makes mention of veterinary surgeons, and in both countries, Egypt and Mesopotamia, we hear of doctors specializing in particular complaints and sometimes acquiring a great reputation in that branch, a reputation not necessarily confined to their own land. More perhaps than any other art was medicine in the ancient world internationalized.[25] A famous Egyptian doctor might travel far afield to treat an important patient. Thus Parimachu[26] the Egyptian was summoned to Asia Minor to the sick-bed of the king of Tarkhuntash. Ramses II, according to a late story, sent his court physician to Hattusas to cure Bentzesh, the sister-in-law of the Hittite king Hattusilis—it is interesting to note that, when the doctor failed to drive out the demon that possessed her, Pharaoh was constrained to send the holy image of the god Khonsu, by whose aid the cure was duly effected. The same Hattusilis, negotiating for a treaty with Kadashman-Enlil II of Babylon, was at pains to explain away the embarrassing fact that a Babylonian physician visiting the Hittite country had been forcibly detained there. Personal visits of the sort were really not uncommon, but what more than anything proves the universality of medicine is the fact that medical books circulated freely from one country to another; Hittite copies of Babylonian medical tablets have been unearthed at Boğazköy, and it is evident that the pharmacopoeia and the prescriptions based upon it were in some measure the common property of doctors throughout the Middle East. It is this internationalization of medicine, and the great reputation won by Mesopotamian physicians, that account for the adoption by European peoples (through Greek and later through Arabic) of numerous Mesopotamian plant-names, while, on the other hand, the tablets definitely explain certain plant-names as being foreign and the herbs consequently imported, as, for instance, *ricinus* from Elam and *cardamom* from Anatolia. But while the evidence shows that in the art of healing there was throughout the Middle East a certain amount of free trade in medical service and in medical knowledge, it must still be remembered that by common consent the actual drug was held to be less potent than the magic rites with which it was administered. The successful physician was he who best knew both sides of his profession, and it was because of this duality that there was a limit to the international character of medicine. The gods of the different countries were not the same, and a charm that worked satisfactorily in Babylon might fall upon deaf ears in Memphis; in the incident of Khonsu related above, Pharaoh's court physician failed by his Egyptian

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spells to exorcise the Hittite devil and could succeed only when the gods he knew were present to help him.

## NOTES TO CHAPTER VII

1. *Iraq*, III, p. 87, and X, p. 26.
2. Professor A. P. Yushkevich contends that in both Ancient Egypt and Babylonia mathematics was primarily of an empirical inductive nature; the elements of separate proofs (geometrical and arithmetical transformations) were more developed in Babylonia, where algebra was widely applied.
3. Sir Leonard Woolley's point of view is here open to controversy. While B. L. Van der Waerden, *Science Awakening* (Gröningen, 1954), pp. 34 ff., is of the same opinion as Sir Leonard, the contrary view is expressed by O. Neugebauer, *The Exact Sciences in Antiquity* (2nd ed., Providence, R.I., 1957). Professor A. A. Vaiman considers that there is no proof of Egyptian borrowing from the Babylonians on this point: indeed it is, in his opinion, possible to assume with equal justice that the Egyptians had their own method of deducing the rule (based on the rule for computing the volume of a pyramid from its base and height).
4. Made by impressing the corner of the stylus in the clay, and representing the ☾ of the earlier pictographic texts.
5. Each table contained one 'top number' (of 1, 2, or 3 sexagesimal places) multiplied by 2, 3, . . . up to 19, and thereafter by 20, 30, 40 and 50. The 'top numbers' were numbers like 12 or 16, 40 or 44, containing only factors 2 and 3 and 5, and in addition to these the 'irregular' top number 7. In order to multiply, e.g. 18 by 29, one had to split 29 into 20 + 9 and use the table of multiples of 18, adding together the two figures given.
6. Professor A. A. Vaiman draws attention to the discoveries made at Susa in 1936 which throw light on our knowledge of Babylonian geometry. It appears that the Babylonians had a better approximation for the area of circle and the length of its perimeter which corresponds to the approximation $\overline{\pi} = 3\frac{1}{8}$. See O. Neugebauer, *The Exact Sciences in Antiquity* (2nd ed., Providence, R.I., 1957), p. 47.
7. The Jewish calendar is based upon this 19-year cycle.
8. VAB. IV, Nabonidus, No. 1, pp. 226, 57-8.
9. VAB. IV, Nabonidus, No. 3, pp. 238, 21.
10. Siut I, 285.
11. Concerning the question so much debated among Egyptologists as to whether there existed, side by side with the civil calendar, a lunar calendar, Sir Leonard Woolley, in response to a suggestion by Professor B. L. Van der Waerden, summarized as follows the opinion of Professor R. A. Parker, author of the latest work on this subject [*The Calendars of Ancient Egypt* (Chicago, 1950)], which is in contradiction to his own view.

    Certainly all authorities agree that lunar months were in use in the temples. The days of the lunar months had names of their own, e.g. the second day was called 'new crescent day', the fifth day, 'day of offerings on the altar', the thirtieth, 'day of going-forth of Min'. Parker gives good reasons for his opinion that the lunar month began on the morning when the old moon sickle could no longer be seen.

    The differences of opinion between authorities mainly concern the question whether these lunar months may be said to have constituted a calendar, i.e. whether sequences of twelve or thirteen lunar months were considered to form a year. Parker's opinion is that such a lunar year did exist, and that its beginning was connected with the rising of Sothis (Sirius) in such a way that the feast of the rising of Sothis always fell into the last month of the lunar year.

    Other authorities maintain that there also existed, besides the civil and the lunar calendar, a fixed Sothis year beginning with the rising of Sothis. In favour of this opinion

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texts may be quoted such as the following inscription in the temple of Denderah: 'years are reckoned from her [i.e. Sothis's] shining-forth'. However, these texts may also refer to the beginning of the lunar year which follows the rising of Sothis.

12. Sir Leonard Woolley notes that an observation of this sort does not imply any astronomical knowledge: for a primitive people the temporary disappearance and reappearance of prominent stars is a phenomenon as obvious as it is presumably important. The South African Bushmen, for example, note the heliacal rising of Sirius and Canopus and use their later movements as an index of the passage of winter; and in many parts the rising and setting of the Pleiades is taken as a check-point for agricultural activities.

13. This, the generally accepted figure, is in fact only an approximation; the solar year being really less than the assumed 365·25 days, the Egyptian year would lose one day not in every four years but in 4·126 years; the cycle therefore would be 1,506 years. Most scholars now agree that the beginning of the calendar was reckoned from approximately 2776 BC rather than from an earlier cycle starting about 4231 BC. The following paragraph should be read with this proviso in mind.

14. It seems possible that at some time—before the reign of Amenhotep III of the Eighteenth Dynasty—there was a change in the order of the months; but, if so, the innovation was theological rather than calendral. It does not in any case affect the matter under discussion.

15. Tung Tso-pin, 'The Chinese and the World's Ancient Calendars' in *A Symposium on the World Calendar*, ed. by the Chinese Association for the United Nations (Taipeh, 1951), pp. 3-22.

16. Professor Tung produces other arguments in support of this conclusion, but that quoted here is the most striking.

17. The very slight error in the Ssu-fen calculation of the lunar month would result in one day too many in about 307 years; the error in the calculation of the length of the solar year would mean one day too many in about 107 years. In the latter case the discrepancy would be obvious at the end of the *Fu* cycle of 76 years. The saying of the Han astronomers about the need to revise the calendar every three hundred years is clearly aimed at the lunar month. It further implies that the Ssu-fen calendar (apart from which the saying is meaningless) had actually been under observation for many centuries before the Han date.

18. There is no evidence associating the genesis of the Chinese calendar with the period treated in this volume.

19. Professor Shigeki Kaizuka *et al.* observe that when a new dynasty received the Mandate of Heaven and became the ruler of the empire, it was believed that certain steps should be taken which would symbolize the fact that it was a new reign, independent of the preceding dynasty. One of these steps was calendar reform. This is the reason why in early times the succeeding dynasties rotated the month on which the year began, the 'prime' month. For this reason some sort of calendar reform was almost a 'must' for a new dynasty.

20. Professor J. Leclant, however, suggests reference to a passage of the inscription on the Bubastis Gate at Karnak concerning the year 15 of Takelot II, i.e. *c.* 820 BC [R. A. Caminos, *The Chronicle of Prince Osorkon* (Rome, 1958), pp. 58 sq.]: 'the sky swallowed not the moon'—the interpretation of which has led to a very considerable flow of ink.

21. It should be noted that the date is not accepted by all scholars.

22. The character of the 'omen texts' can be illustrated here by two examples; one, dated to the time of the First Dynasty of Babylon, reads, 'If the sky was dark [on the first day] the year will be bad. If the sky was clear when the new moon appeared the year will be happy.' A more elaborate text, taken from the Ammizaduga tablets, reads, 'If on Sabatu 15th Venus disappeared in the west, remaining three days from the sky, and on Sabatu 18th appeared in the east, catastrophes of kings; Adad will bring rains, Ea subterranean waters; king will send greetings to king.'

23. The prominence of Marduk at once suggests the First Babylonian period.

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24. The importance of astral phenomena for the agriculturalist has been noted above, in the section dealing with the calendar. So Hesiod, 'When the Pleiades [the daughters of Atlas] rise, it is time for harvest and time for sowing when they go down again.'

25. In contrast to the journeyings of Egyptian doctors, we may note that about 1372 BC Tushratta, king of Mitanni, sent to Amenhotep III of Egypt a healing statue of Ishtar of Nineveh, with the reminder that the goddess had already visited the banks of the Nile in the time of his father.

26. For Parimachu, cf. *supra*, p. 595, note 22.

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CHAPTER VIII

# RELIGIOUS BELIEFS AND PRACTICES

To a very large extent the development of religious ideas amongst the primitive groups of mankind was conditioned by the social organization of each group. In Chapter II of Part II of this volume an attempt has been made to trace the growth of those organizations and to define the varying principles that underlay them; thus Egypt with its centralized government exercising a unified control over the entire valley of the Lower Nile was contrasted with Mesopotamia, where individual city states flourished in independence and preserved their identity even when forced to submit to the political suzerainty of a stronger neighbour, and, as against both these, we have seen, in countries where agriculture was impossible and nothing invited urbanization, the conditions of the Stone Age perpetuated by the families and petty clans of desert-haunting nomads. To surroundings so different the same religious beliefs were ill-adapted; local creeds were bound to take their colour from local circumstances, and the Egyptian, the Sumerian and the Beduin Sutu could not be expected to think alike.

## SUMER

The Sumerian religion is not, strictly speaking, autochthonous. The earliest inhabitants of the delta were immigrants and they brought with them a system of belief already formulated. This is quite obvious from the fact that all the city states acknowledged the same pantheon; each had its own patron deity, locally supreme, but that god or goddess had a recognized place—and not necessarily the highest place—in the great Council of the Gods who were the gods of Sumer. That is something which could not have been brought into being if the local cults had originated independently, for neither alliances nor civil wars between the cities could ever have resulted in a common creed and in a harmonious hierarchy of heaven; the fundamental conformity in matters of religion of the distinct and often hostile states goes back to beliefs shared by all the settlers long before the cities were built and the states developed.

Of the ideas held in that prehistoric age there is, of course, no contemporary record. We can infer them only indirectly, from the customs and the traditions of a much later time; but religion, though far from static, does tend to be conservative at least in its outward forms; mythological tales are shown by their very character to go back to primitive ages, and popular superstition as exemplified in such things as magic will preserve the crude

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beliefs of early man long after they have been banished from the orthodox creed.

In common with other men in a like stage of development the first settlers in southern Mesopotamia moved and had their being in a world which was very much alive. The phenomena about them were not inanimate; in or behind each of them there was a personality no less real than man's and to be comprehended only in terms of the personality of man. This did not mean that everything was a god; it did mean that in and through everything god was to be apprehended. A reed growing in the marshes was, of course, just a reed; you could use it in the building of your house, the shepherd could cut from it a pipe to make music to his flock, the scribe could trim its stem into the pen of the ready writer; but all these powers together, which made a reed what it was, were combined in the personality of the Reed goddess. It was Nidaba who produced the reeds (did they not sprout from her shoulders ?) and taught the herdsman his tunes and inspired the scribe; 'she was one with every reed in the sense that she permeated it as an animating and characterizing agent; but she did not lose her identity in that of the concrete phenomenon and was not limited by any or even all existing reeds'. When, in the Flood legend, the god Ea wants to warn Uta-Napishtim of the coming disaster but is afraid to betray the secrets of the gods to a mere man, he whispers the news to the house-wall, saying 'Reed-hut, Reed-hut, listen', and so salves his conscience, because after all the reeds partake of the nature of god. So, in magic spells, such things as salt and grain—and not the natural grain alone but the flour of man's grinding and the bread of man's making—are not merely inanimate substances; each of them has, or at least represents, a personality which is independent of man and may be beneficial to him or harmful as it pleases. Clearly these personalities are not all on the same plane; if measured by their power to help or to hurt, some of them must be infinitely greater than others.

Accordingly, man's worship must needs recognize a hierarchy of the gods. But the Sumerian gods are not symbols invented to explain and illustrate a rationalized theory of the cosmos. The Sumerian did not evolve the gods from his inner consciousness, he encountered them; they revealed themselves to him in and through the phenomena of the physical world, and his conception of them is proportioned by the degree to which they affected him in that revelation.

Living in the flat Mesopotamian valley a man cannot fail to be impressed and at times overwhelmed by the vast expanse of encircling sky, to realize his own insignificance in the face of its unbridgeable remoteness—'Godhead awesome as the far-away heavens', said the Sumerian; and the Power that he saw there was one of serene majesty:

> Around the ancient track march'd, rank on rank,
> The army of unalterable law.

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and so in Anu, Lord of Heaven, was to be found the source of all law and order.

But human experience shows only too clearly that law and order, if they are to be effective, require the backing of force. Under the vault of the sky blows the storm-wind, and the force and the violence of it is Enlil, who executes the will of Anu and guarantees order against chaos; but Enlil has in himself the horrible wildness of the storm also, so that he who upholds the universe may turn his powers to its destruction; the thunder is his voice, his weapon the lightning:

> O father Enlil, whose eyes are glaring wildly
> How long till they will be at peace again? . . .
> O mighty one who with thy fingers has sealed thine ears, how long?
> O father Enlil, even now they perish!

None the less is Enlil, the Air god, the great benefactor of mankind who establishes plenty and prosperity in the land and teaches man the use of the pick-axe and the plough.

And, naturally, the third great Power is the earth. Not the world, with its barren deserts and inhospitable mountains, but the kindly earth that yields grass for the cattle and grain for the food of man, in whose green fields the ewes and goats bear their young and the cows give milk, so that man prospers and is fruitful in his turn. This is Mother Earth, the inexhaustible and mysterious source of all life, who as Nin-tu, 'the lady who gives birth', or Nin-makh, 'the exalted queen' or, as she is called later, Nin-khursag[1] takes her place together with Anu and Enlil in the Council of the Gods.

Man at one moment looks on the ploughed field and sees in it the promise of life and the manifestation of 'the Mother of all children'; and again he sees it scorched by the sun and the crops withered for lack of moisture, to be recovered only if water be brought to refresh the soil. So, from the beginning, there was another earth god, En-ki, 'Lord of the earth', the male element who fertilizes the passive womb of Nin-tu with the life-giving waters from river and spring and well. But as time went on the god's sphere was more exactly defined; as Enlil's minister he was more particularly the Water god, lord of the streams and canals that run through the fields, but also of the mysterious waters that are below the earth, those on which indeed the earth is upheld, which are discovered in springs and wells; and because running water is devious in its ways, as if with a will and an intelligence of its own, and because the underground waters are profound, dark and brooding, En-ki is the god of wisdom and of creative thought, and he is the god of magic whose powers are shown in the incantations of the priests which purify the unclean and drive away evil spirits. Connected with the earth again was Nergal, once a Sun god, but embodying the evil power of the sun's rays which smite with fever and death, who with Eresh-ki-gal, his spouse, ruled over the infernal regions deep down below the earth. Obviously the sun itself was a god, Utu,

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(the Shamash of the Semites), though he ranked after Nannar, the moon; the planet Venus was Ininna, Ishtar. In and behind everything that man saw or conceived he could recognize a god.

Now just as the fruitful land of Mesopotamia where man lived so decent and orderly a life had only risen from the primeval marsh by the curbing of the turbulent waters of the flood, so too must it have been in heaven. Everything had begun with the dark and formless waste of waters which the Babylonians called Ti'amat, and from that chaos, born of its ruling goddess, had emerged beings from whom were descended the gods, and these had at last subdued chaos and introduced order and rule. But in an earthly state order and rule can be assured only by a formal government, and since all things begin with the gods and earthly phenomena are but a manifestation of the divine it follows that the universe must be directed by just such a government, namely by an Assembly of the Gods. There are many texts describing how that assembly was conducted. The gods met together—i.e. those whose superior powers gave them, as it were, full rights of citizenship; Anu presided and his son Enlil stood at his side, and one or other of the two introduced the matter at issue and it was then debated, sometimes heatedly and at length, by any gods who cared to speak, but the voices of 'the seven gods who determine destinies' had the greatest weight. The vote had to be unanimous, and, when all the gods had assented, saying 'Let it be', Anu and Enlil announced the decision as 'the verdict, the word of the assembly of the gods, the command of Anu and Enlil'. The proceedings scarcely warrant the description of the meeting as 'primitive democracy' which some writers have applied to it, for although the opinions of all the gods present are asked and can be freely expressed yet it is clear that the necessary 'unanimity' is in the end imposed by the moral authority of Anu, who is no mere chairman but 'the King of the Anunnaki'. At the same time the earthly parallel to this divine assembly is not, one imagines, the royal council chamber of a fully fledged city state but rather that of the days when first the early townships became kingdoms.

It was during the long ages that elapsed between the first immigration of the al'Ubaid people and the dawn of real history that Mesopotamian religion developed its peculiar character.

The first settlement must have been by families, or by small groups so far related by blood that they could count as a family clan, and under a patriarchal social system the head of the family was its absolute master; he was also its religious leader. As the community grew in size and the need for co-operation for such works as the digging of canals brought outside or distantly related families into what had been a closed circle, the head of the chief family would retain and extend his authority even though he might collect about him the heads of minor families as consultants or as delegates. The change was gradual and unpremeditated and its process seemed to involve no radically new ideas—the new town was only the old village 'writ large'; but when with time the social organization had crystallized, when precedent

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leading down to precedent had turned custom into law, when in fact the city state was an accomplished fact, then men's beliefs had to accommodate themselves to changed conditions. The city state was a phenomenon, recognizable as such, and, like all phenomena, it must be divine in that it was the outward manifestation of a particular deity; behind the city state, animating and characterizing it, there must be a god; but it was only the form of his manifestation that was novel; the god himself was no new arrival but one of the familiar hierarchy of gods, and regarding his identity there could be no doubt whatsoever.

When at a later date Sumerian theologians attempted to find a religious basis for the organization of the state as it existed in their time they pictured a divine pantheon functioning as an assembly with a king at its head. It was by the decision of that synod that man had been created, and he was created for one purpose only, to supply the gods with food, drink and shelter, so that they might have full leisure for their divine activities:

> The Anunnaki eat, but remain unsated,
> The Anunnaki drink, but remain unsated;
> For the sake of the good things in their pure sheepfolds
> Man was given breath.

To ensure the success of this plan the gods established lands and cities, appointed one or other of the pantheon as the divine ruler of each, and he in turn selected his human representative who was the king of the city state. The Sumerians were dealing with the facts as they knew them, but the territorial claims of the various gods, which they attributed to an arbitrary division of the earth by the divine assembly, must be capable of a historical explanation.

Each of the original families or clans had been under the special protection of one or other of the gods chosen out of the common pantheon, the *paterfamilias* being the minister of his cult. If the family grew in numbers and authority that was due to the god's favour; the greater the material advance the more certain was it that the god identified himself with the clan's fortunes; the more essential became the service due to him and the more significant the relation between the *paterfamilias*, who now ranked as head of the state, and the patron deity. It was not by any conscious process of reasoning and not by any revelation but by the inevitable logic of development that the Sumerian came to recognize the theocratic nature of his city state.

The god had taken up his abode amongst his worshippers. Whatever they had done had been done by and through him, whatever they had acquired had been of his getting and was his property. Now, as things had evolved, the city was his capital and all the state territories were his domains; the city's human head owed his position to being in a peculiarly close relation to the god and the authority that he in fact exercised could be his only as it was delegated to him by the god; he was the steward of the city's real lord. This was no legal fiction but a plain statement of fact. The whole country was

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literally the god's property;[2] the fields might be farmed directly by the ministers attached to the temple which was 'the House of the God' or they might be let to tenants, but they were inalienably his; any attempt to expropriate them, even on behalf of the king, was an act of impiety which a reformer such as Urukagina was obliged to make good; even where fields had been granted in fee simple to the heads of patriarchal families these were the god's beneficiaries, and we find the ruler buying in such fields so as to re-incorporate them in the state property. The entire economy of the state was directed to the proper maintenance of the god's temple and its ritual, and, although the king might delegate some of his religious duties (as Entemena seems to have appointed Dudu to be chief priest of Ningirsu at Lagash), yet the principal sacrifices of the year were conducted by the king in person, his chief function being that he was the administrator of the landed possessions of the god.

From the beginning of the proto-literate period, when first we have written documents whereby we can test what hitherto have been deductions, we find that the theocratic city state is an accomplished fact. Each state is the domain of a particular god; Nippur belongs to Enlil, Ur to Nannar, Lagash to Ninurta, Uruk to Anu, and each of these gods is, within the limits of his domain, an absolute monarch.[3] Now had each god represented a different theological system the position would have been simple in that each state would have been a distinct unit having nothing in common with its neighbours; but in fact all the gods alike were members of one and the same pantheon acknowledged by all the states. The citizen of Ur, while he hailed Nannar as his divine king, fully recognized the divinity of the other gods and maintained in his own city temples for their worship; the difficulty was to reconcile the supreme overlordship of Nannar at Ur with his position in the traditional hierarchy of the gods. That difficulty was successfully overcome by the characteristically Sumerian expedient of relating the divine with the human, the supernatural with the physical world.

Heaven is organized on the lines of a state. At the head of it is Anu, to whose authority the other gods voluntarily adapt themselves, and he assigns to each his task and sphere. The great gods associated with him form the Council of Gods, over which Anu presides; there the destinies of the universe are discussed and decided by the assent of the seven leading members of the Council and the execution of the decrees is entrusted to Enlil or some such other god as is deemed fittest for the task. And as on earth so in heaven the delegation of power can, in times of crisis, involve radical changes. When Ti'amat threatened to destroy the gods, Anshar, who was then the supreme god, bade his son Anu meet her in battle, but Anu failed and 'all the Anunnaki ranged in assembly sat speechless with their lips covered'; at last Anshar proposed the young Marduk as champion, and Marduk accepted the mission, but on his own terms, that he should be given the kingship of the gods. A meeting was summoned at Nippur and, after a banquet at which the gods drank deeply and forgot their cares, they conferred upon Marduk the insignia

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of royalty; he slew Ti'amat, and thereafter ruled as the chief of the gods, 'King of the Anunnaki'.

Now this story is a re-casting of an older one according to which it was Enlil who played the part of champion and was therefore hailed as king of the gods; the original version has been edited to correspond to historical fact. The Sumerian knew perfectly well that on earth each god actually lived in his own territorial domain and was absolute master therein; he ruled by divine right and it was Enlil himself who had defined their respective kingdoms: 'according to the sure word of Enlil, King of the Lands, Father of the Gods, have Ningirsu and Sara [the god of Umma] marked out the frontier between them'.[4] Should trouble arise, a quarrel, for instance, about water-rights on a doubtful boundary line, a war between two states meant that each god was maintaining what he believed to be a just claim, and whichever side won could obviously invoke the decisive judgement of Enlil. But should the king of a city state embark upon a war of conquest and subject other states to his imperial rule, how could that accord with the divine rights of the patron gods of those states? The case had actually arisen. Babylon, the city state of Marduk, hitherto not a very prominent deity, had successfully made war upon its neighbours and the Babylonian king—not even a Sumerian, but a Semite—claimed the title of king of Sumer and Akkad; but if the other city states were to admit that claim the *de facto* position had to be legalized in accordance with Sumerian beliefs. The answer to the problem was the logical one given by the remodelled myth; what happened on earth was but the phenomenon corresponding to what had happened in heaven, where the High Assembly of the Gods had decided to entrust to another of their number, namely Marduk, the insignia of supreme authority. But that supremacy did not invalidate the divine rights of the other gods within their allotted spheres. When, in an earlier day, Ur-Nammu of Ur had conquered Babylon he was indeed extending thereby the overlordship of Nannar, his own city god (Ur-Nammu even calls him 'King of the Anunnaki'), but he could not interfere with Marduk's absolute rule over Babylonian territory; what really happened was that he took the place of the Babylonian prince as priest and administrator of the landed possessions of Marduk (i.e. the temple revenues now passed through his hands), and it was as that god's viceregent that he rebuilt the huge Ziggurat at Babylon. Only a foreign invasion could upset an order of things which every Sumerian recognized as part of the cosmic scheme; the Elamites might destroy the temples of Ur and carry off the statue of Nannar; infidel Hittites might lay Babylon waste and take Marduk away as prisoner to Khanî; but a Sumerian conqueror, even though he might destroy a temple in the heat of battle, yet would afterwards be at pains to rebuild it in the god's honour. The unification of the empire under a Sumerian dynasty brought no change to the cults of the subject cities except that the new dynasty took over the maintenance of the cult from the former prince; nothing could dispossess the god himself of the territory which Enlil had assigned to him.

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The strictly limited sphere of his earthly kingdom had no bearing on the divine powers and attributes of the deity. Nannar was king of Ur and his royal prerogatives stopped short at the frontiers; but as Moon god he was equally reverenced throughout all Sumer and had temples dedicated to him in other cities, just as at Ur there were temples of other gods than him; he was one of the great gods universally recognized. But at Ur he was at home; there was a marked difference between his temple there and those of other gods. Many writers have emphasized the fact that in the Sumerian language (as also in Akkadian) the word for 'temple' is *E*, 'house', implying that according to Sumerian beliefs the god actually lived in the building precisely as the human citizen lived in his house, and this is undoubtedly true—the temple was in a literal and not only in a metaphorical sense 'the House of God'. But it is a mistake to stress overmuch the linguistic argument and to assert that the difference between a 'temple' and a 'house' is determined not at all by the character of the building but only by its ownership, and that the functions of the two are identical because the same word may be used for both.

The types of building are, in fact, very different. The god was to live in his house just as did the man; but because the functions of a god are not the same as those of the private citizen, and the houses must answer to the respective functions of the occupants, the plans of the houses cannot be the same. The only lay building that resembles a temple is the royal palace; there we find an obvious likeness, but it does not support the linguistic argument. The city's ruler is not merely, *quâ* ruler, housed rather better than his subjects; he is the representative of the god and must vicariously perform the god's functions and therefore requires a similar setting. So his palace is unlike a private house and approximates to the god's temple.

Actually the temples differ one from another according to the particular function that they had to serve; thus at Ur the E-nun-maḫ, being the god's harem (it was dedicated to Nannar and Nin-gal together), is wholly unlike the normal building with its forecourt, inner court and sanctuary which constituted the reception hall of the deity; and according to Herodotus the shrine that surmounted the Ziggurat of Babylon was a single bed-chamber. For most purposes the reception-hall type of building best met the case, and this is the pattern of all or nearly all the temples to other gods; here they receive their worshippers and the offerings of the faithful can be duly placed before them. The city god himself would also have such a temple, though with the growing wealth and elaboration of his kingdom there would be added to the nucleus of the shrine all manner of subsidiary buildings, vast magazines for storage, kitchens, scribes' quarters, administrative offices and working rooms for weavers or metal-workers or other craftsmen. But whereas the temples of the gods in general might be built anywhere—thus at Ur the temple of En-ki is on the southern rampart looking across the plain to his own city of Eridu, and that of Dim-tab-ba is on the highest of the mounds made

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by the ruins of the prehistoric town—the city god has a place apart. The simple expression 'the House of God' which in contrast to such a word as *templum* seems to reduce the temple to the dimensions of a human dwelling, is corrected for us by the fact that the 'house' is set in a *temenos*, a whole quarter of the city set apart for its divine ruler. This 'Sacred Area' was cut off from the lay town by massive walls with monumental gateways; its ground level was artificially raised so that it formed a high terrace dominating its surroundings; there would be a number of separate buildings within the walled area, but all were dedicated to the service of the patron god of the state.

It happens that the Temenos of Ur has been more thoroughly excavated than that of any other site and a description of it can therefore be more fully detailed; but what is true of Ur would be generally true of any Sumerian state capital.

In the time of the Third Dynasty of Ur (*c.* 2100 BC) the Temenos was a rectangle measuring about 270 by 220 yards, oriented with its corners to the points of the compass. Towards the west corner rose the Ziggurat, set on a higher terrace surrounded by a double wall of defence and entered through a monumental gateway, 'Dubal-makh', at its eastern angle (see the plan, Fig. 83). The Ziggurat tower faced NE and had an open space in front of its triple stairway (*v.* Part II, Ch. IV, p. 543) though it is possible that part of this was, as in later times, occupied by twin shrines flanking the central stairs; between the NW side of the Ziggurat and the terrace wall was the lower shrine of Nannar, consisting for the most part of the kitchens in which the god's food was prepared, though whether it was actually offered to him here or in the Holy of Holies at the summit of the great tower we do not know. In front of the Ziggurat terrace, occupying the north corner of the Temenos, was the great courtyard of Nannar to which were brought all the rents and tithes, payable in kind; round the court were the magazines in which the goods were stored, and the offices wherein the record of them was duly kept. To the south-east of the courtyard lay E-nun-makh, a temple dedicated to the Moon god and his wife Nin-gal, twin sanctuaries hidden away in a complex of service chambers. South-east of the Ziggurat terrace was the Gig-par-ku, Nin-gal's own temple, built like a fortress, with the sanctuary at its NW end and the living quarters of the priestesses in its SE half. Whatever building there was in the eastern corner of the Temenos has disappeared; there remains only Dubal-makh, the gateway to the Ziggurat terrace, which was itself a shrine and the Court of Law, where 'the judge sat in the gate to give judgement'. King Ur-Nammu, as the human representative of the god, had his palace built on a lower terrace set against the SE side of the Temenos proper.

The entire complex of the Ur Temenos was named E-gish-shir-gal, the first component being the word '*E*' or 'house', and the inner terrace on which stood the Ziggurat was named E-temen-ni-gur; in neither case does the building bear any relation to the 'house' of the private citizen; rather does the

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similarity of names emphasize the difference between man's dwelling and 'the House of God'.

Something of the sort must have been true from the beginning, for the Ziggurat of the Third Dynasty of Ur is but an elaboration of the simpler platform-tower of the earliest times and represents the tradition of the first settlers in the Euphrates valley who from their upland home brought the belief that the gods lived on the mountain-tops and required 'High Places' for their worship. But by the time of the Third Dynasty of Ur, towards the close of the third millennium BC, the ever-growing formalism of the state religion had accentuated beyond measure the gulf that separated the divine ruler from his human subjects.

It is tempting to compare the position of Nannar at Ur (and the same would hold good for the patron deities of other city states) with that of the sultan of Turkey in the ultimate decadence of the Caliphate. Nannar was the absolute autocrat of the state which he embodied. The land itself and its material wealth were at his sole disposition and were held only on sufferance by individuals; the mortal king was no more than his vizier exercising a delegated authority; his priesthood formed a court headed by ministers who presided over the various functions of the state, ministers of war and agriculture, of commerce and justice, and their subordinates filled the minor posts of government so that the whole conduct of everyday life was permeated by the influence of organized religion; but the god who was the mainspring of all the city's activities remained in the seclusion of his *temenos*, unapproachable by his lay subjects whose acts of homage could be performed only vicariously through the medium of the priests, unseen except on rare occasions such as the spring festival when he went in solemn procession to the outlying shrine where was consummated the sacred marriage that ensured the fertility of the earth. The citizen of Ur could not but be conscious of his supreme overlord. He had only to lift up his eyes to find his horizon dominated by the towering mass of the Ziggurat. The schoolmaster of his youth had been a priest of Nannar; his doctor and oracle-manager was a priest; his garden-ground outside the city was temple property; to the temple he had to pay rent and tithes, and his social standing obliged him to make voluntary gifts for the sacrifices on feast-days innumerable; if he went to law, it was probably a priest who would hear the case, and even in business matters the factories and the wholesale warehouses with which he had to deal were as likely as not to be dependencies of the house of the god. None the less, the barrier remained insuperable, and it extended also into the moral sphere. Just as the god's image was secluded in the temple sanctuary and could be approached only indirectly through the intermediary priesthood, so the god himself could not be approached even in thought by a mere mortal. On the personal seals of the citizens of Ur at the time of the Third Dynasty the commonest subject represented is the adoration of Nannar. The Moon god is seated on his throne and his worshipper, the seal's owner, comes before him; but an



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invariable feature of the design is a third figure, that of the worshipper's personal god (see below, p. 711) who introduces him into the divine presence and acts as mediator and intercessor between him and a power too great for him. The picture summarizes very faithfully the relation of man to the major gods.

What was true for the chief god, the divine king of the city, was in its degree true of the other great gods also. They were fellow members with him of the same hierarchy and their divinity was not lessened by the fact that in his realm they did not share his territorial rights. The Temenos at Ur was the special property of Nannar and of Nin-gal his wife, and although there were within the Temenos shrines and side chapels dedicated to numerous other deities, those were the minor gods who formed as it were the court of Nannar; thus in the Nin-gal temple there were chapels dedicated to no less than nine gods who, as members of the goddess' retinue, had their allotted places in her 'house'. But with the great gods it was different; they had 'houses' of their own outside the Temenos walls, temples built by kings and maintained out of the state revenues. Thus, Ur-Nammu builds at Ur temples for Anu and Enlil, for Nin-sun, Nin-ezen, and En-ki; we have records of the building or repairing of the temples of Inanna, Nirgal, Nana, Shamash, Ninni, Ilabrat, Ninsianna, Tammuz, Belit-ekallim and Adad; in the interest of the state all the great powers had to be propitiated with sacrifices and offerings, their houses adorned and the ritual of their service duly ordered by their own priests. Ultimately it was the citizens that paid for all this, but the cost of the temples was a premium on a policy of national assurance and the individual citizen had no say in the matter; it was the business of the government. If, as well might be, an individual wished to win the favour of one of the 'great gods' for some special reason, he could, of course, make his own contribution to the temple—an offering to the treasury, a victim for sacrifice; but he had no personal access to the deity; just as in his prayers he needed the mediation of his personal god so it was only through the priest that he could vicariously approach the altar.

The aloofness of the gods from common life was the logical outcome of the gods' royal status. As the city state grew in size and in complexity the differentiation between government and governed became more and more clearly marked, and the human head of the state tended to withdraw into the narrow court circle which traditionally hems in the Oriental monarch.[5] In the temple the same tendency was emphasized by the more formal ceremony owed to a god; certainly in the periods of the Third Dynasty of Ur and of Larsa, for which documentary evidence is most available, contact between the citizen and the city god had been reduced to a minimum.

But the mere fact that Nannar and his consort Nin-gal remained almost from year's end to year's end in the seclusion of the Temenos, and that a jealous priesthood barred men's access to the 'great gods', did not mean that the religious element was at all lacking in the life of the individual Sumerian.

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Rather, the contrary is true. The gods of Sumer were innumerable; the recorded names of deities run into thousands, and although some, or even many, may stand for different aspects of one god rather than for distinct beings, yet there must have been a vast number more whose names do not happen to occur in documents extant today. Seeing that behind every phenomenon in the physical world there was an immanent deity it was indeed impossible to set a limit to the host of heaven, and in whatever man did some god or other was concerned. It is in this way, apparently, that we must explain the chapels of the minor deities found in the residential quarters at Ur. In the relatively small area excavated there occurred amongst the houses four buildings of a religious character. They were quite small, simple and none too regularly planned—in two cases at least part of a private house had been sacrificed to make room for the chapel—but the layout, with fore-court and sanctuary, was modelled on that of a normal temple. Tablets found in them showed that they had been founded by private citizens at their own cost and were maintained largely by voluntary contributions, though there might be some small endowment which assured the attendance of a regular priest on certain days. Only in one case was the dedication ascertained, and there the shrine's owner was Par-sag, an insignificant goddess whose only known function was the safeguarding of travellers in the desert; her help might be invaluable on occasions, but such occasions would arise intermittently if at all and would concern individuals, not the state. Judging from the actual discoveries made, it would appear that in the city as a whole there were very numerous little shrines in honour of the lesser 'departmentalized' gods and goddesses, set up by the piety of individual citizens and serving the casual needs of ordinary laymen. There is no mention of anything of the sort in the religious literature of the time, and we have to rely upon archaeological evidence alone; but if that be rightly interpreted we cannot but realize that formal religion—or superstition—played a larger part in the life of the Sumerian than the exclusive ritual of temple liturgy would suggest. The city and the city's god being identical, a man's duty to that god was virtually done when he had paid the dues and taxes that enabled the machinery of state to run smoothly. On the other hand there were in everyday life all manner of risks and chances, incalculable events whose outcome lay in the hands of the gods, and to propitiate the right god in each case was what any prudent man would do. And it was a personal matter. These minor deities were approachable; their humble chapels faced upon the public street, and the doors stood open so that anyone could go in and lay his offering upon the altar and look the god's statue in the face; and since he would not go in unless he felt a real need, his petitions were likely to be more or less sincere.

But there was another aspect of Sumerian religion which was yet more personal and intimate.

From the earliest times the people had had some kind of belief in a future life. In the al'Ubaid period men put in the graves of their dead not only the

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vessels of food and drink that they might require in another world but also clay figures of what may be the goddess of that world, as if to commend the newcomer to Eresh-ki-gal, 'Queen of the great earth'. Tomb-offerings continue in the Jamdat Nasr period, and for the Dynastic Age we have the astonishingly rich burials of the 'royal cemetery' at Ur. It would be unwise to draw general conclusions from the 'royal tombs', because in their case there was a ritual entirely different from that of the ordinary interment, and because kings and queens, being god's representatives on earth and themselves semi-divine, may well have been thought not to share the common lot of mankind—they did not die, but moved on to another and a better world. A like immortality must have been extended to the followers whose bodies were found in the royal tombs:

> His beloved concubine,
> his musician, his beloved entertainer,
> his beloved chief valet . . .
> his beloved household, the palace attendants,
> his beloved caretaker, . . .
> whoever lay with him in that place. . . .[6]

for these had no burial furniture of their own; they were not dying in the ordinary sense, nor were they merely sacrificial victims, but as faithful servants they accompanied their lord and master. It was a custom, and a creed, which persisted into the period of the Third Dynasty of Ur when the divine Shulgi shared his mausoleum with the members of his court whose service had won for them the privilege of passing with him to heaven. For the limited number thus associated with the divine the surrender of mortal life need have had no terrors, but that was certainly not true of others. The picture given in the mythological and religious texts is of a next world which exists indeed, but as a place of gloom and horror, 'the land of no return':

> Ghosts like bats flutter their wings there;
> On the gates and the gateposts the dust lies undisturbed,

and it is hard to say which are the more miserable, those who enter the abode of shades or those who, not having received proper burial, are shut out from it and must haunt the living world in impotent malevolence. Perhaps it was partly to placate the departed that the food and drink offerings were placed with the body; but surely the more luxurious furniture found in the richer graves, stone vessels, objects of gold and silver and even gaming-boards and instruments of music, suggest a belief in another world not wholly unlike this; and whether it was fear or hope that prompted the offerings they do at least imply that death was not regarded as the final end.

Such a belief was shared, so far as we can tell, by most races in the ancient world, and there was nothing peculiar in the Sumerian custom of making provision for the dead. But about 2000 BC, during or at the end of the time

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of the Third Dynasty of Ur, a revolutionary change took place in the ritual of burial. Up to now the dead had been laid to rest in regular cemeteries which might be within the city walls[7] but were special areas reserved for the purpose; but with the establishment of the Larsa Dynasty we find a new rule universally observed—the dead are buried in the houses of the living. At the rear of the house, i.e. as far as possible from the part into which strangers would be admitted, there was a long narrow court roofed for half its length; under the pavement of the open half was the brick-built family vault (it might contain a dozen bodies) and the roofed half was a chapel dedicated to the worship of the family god. At the same time there is a change in the ritual of burial; after the door of the vault had been sealed up a platter and a clay water-jug might be set against its brickwork, but that was all, and inside the vault, even when the household was obviously wealthy, there were no offerings whatsoever. The intention is quite clear. The dead man continued to inhabit his familiar home; he was still a member of the family, and took part in the family prayers conducted by the head of the household; he required no special tomb furniture because everything in the house was still at his disposal; when the omen texts speak as they do of apparitions of dead members of the family haunting the house this is only the unpleasant aspect (which due piety could avert) of what otherwise was a previous link between past and present generations. The domestic chapels bear witness to a changed view regarding life after death, and also to an aspect in the religion of the Sumerian that was much more intimate and personal than could be the state ceremonial in the temples of the great gods or his occasional recourse to the minor deities of the wayside shrines who might further such projects as came within their pecular provinces—more intimate than anything known before. From quite early times, apparently, an individual had been wont to place himself under the protection of some lesser member of the pantheon who ranked as his 'personal deity', safeguarded his interests and interceded for him with the major powers;[8] but it was not an arbitrarily-chosen personal god that was worshipped in the domestic chapel of the private house. Just as a great god was immanent in the city state, so the family, which was the ultimate social unit, more real and more vivid than the state itself, a phenomenon greater than the sum of the individuals composing it in that they might die but it persisted, was the manifestation of a deity; that deity, whose high priest was the head of the house, had no distinctive name, and needed none, because he *was* the family and could not be distinguished from it; he was not called in to help, as an outsider might be called in, because he was inseparable from the household. The concept does not necessarily imply any high spiritual ideals, for the main function of the family god was presumably to assure the family's material well-being, but at least it did bring man into closer touch with the divine. Probably for most citizens personal religion consisted in the family ritual and in regular consultation of those omens and magic rites the knowledge of which was the most valuable asset of the regular priesthood.

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The Sumerian gods were not moral beings. The myths that are preserved, such as those of Enlil and Ninlil, are quite astonishingly gross; lust, cruelty and outrageous violence are characteristic of most of the major deities, and since man was made merely for their service the only 'virtue' that in their eyes a man could possess was the blind obedience of a slave. But just as in the Assembly of the Gods there had to be order and discipline, the acceptance of authority, so as the city state developed society demanded the civic virtues of law-abiding obedience, loyalty, honesty and truth. Such were primarily social duties, but because the state was in the most literal sense a theocracy the ultimate sanction for them was divine, and so in the end the proper rewards of virtue, namely health and long life, honoured standing in the community, many sons and wealth, were given by god.

## EGYPT

In the Nile valley, as in Mesopotamia, early man recognized a personality behind every phenomenon; every external object, just because it was external and therefore not under his control, was a manifestation of some power independent of himself but to be understood only in terms of his own personality. In so far as the conditions of his life were peculiar to Egypt his beliefs were bound to take on a local colour, to emphasize certain aspects of the apparent universe in a manner which would differentiate his beliefs from those of men in other lands and, though starting with a common stock, develop an Egyptian religion quite distinct from that of Sumer.[9]

The dominating feature of existence in Egypt was the sun. In that virtually rainless land it crosses the heaven unclouded from sunrise to sunset 'and nothing is hid from the heat thereof'; the Egyptian, who hated cold and darkness (at night 'the earth is in darkness as it were dead') recognized in it the source of life, and accordingly the personification of the sun's power was for him the supreme god and the creator of all things. None the less, the sun was only one god amongst very many, and even his supremacy seems to have been due, at least in part, to a syncretic process whereby variant local beliefs were brought into a specious harmony.

In the beginning there was the waste of waters which is Nun. But because in Egypt the annual flood is that which makes life possible, the act of creation did not result from the wars of bestial powers such as Mesopotamian legends describe, but was an orderly and peaceful process. Just as when the Nile flood begins to ebb there may come to sight a rounded bank of fertile mud rich in its promise of green growth, so from the waters of chaos there rose the primeval 'hillock of appearance' which was the nucleus of the earth. It was made by the creator god; it could even be the god himself; in any case it was the spot chosen by him for his earthly temple. To the modern mind the difficulty is that there were many such mounds, each alike regarded as authentically original—the sites of temples at Heliopolis and Hermonthis, at Thebes and

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Philae and elsewhere; probably in the course of time every Egyptian temple claimed to occupy the world's primordial hillock; and those temples were in different places and were the homes of different gods. To the Egyptian this presented no difficulty at all; the conception of the creation-hillock was essential, its location in space did not matter; indeed, because it was a universal truth, all the stories could be simultaneously true. If in the very early days, when Egypt was split up into more or less independent nomes, districts each acknowledging allegiance to a different chief god, the act of creation was attributed to varying deities, that too mattered little; when the country had been united under a dynasty for whom Rê was the supreme deity those religious anomalies could be smoothed away by the simple expedient of tacking the name Rê on to that of the local god. In this way the required uniformity was secured, and yet the eternal verities held good.

Actually there are no documents informing us directly of what religious beliefs prevailed in pre-Dynastic times; the pyramid texts are our earliest authorities, and although much of their content must be derived from old tradition yet the form in which it is presented is that of a more sophisticated age. According to them Atum the Sun god, self-created and alone on his primeval hillock, creates Shu, god of the air, and Tefnut, goddess of moisture; these give birth to Geb, the Earth god, and Nut, the goddess of the sky, and they in their turn produce Osiris and Isis, Seth and Nephthys; and later other gods came into being.

This is an orderly account, but it achieves order only by disregarding all inconsistencies; there were different stories as to how Atum created Shu and Tefnut, by spitting out one and sputtering out the other, or by making them out of his own semen; in one tale Shu is the natural father of earth and sky, in another they had been one and he tore them violently apart; according to one legend, preserved by Plutarch, Isis and Osiris were not Egyptian deities at all but were brought in from Byblos[10] where they were known as Ishtar and Tammuz and had nothing to do with Geb and Nut; and again there were 'gods' before Atum the creator emerged from chaos and 'began to rule that which he had made'. Perhaps the most striking instance of the way in which the Egyptian accepted what seem to us contradictions is the magnifying of Ptah. When the country was consolidated by the Pharaohs of the First Dynasty and Memphis was selected by them as capital of the Two Kingdoms the difficulty arose that Memphis had never before been an important town and its local god, Ptah, was of minor rank, whereas obviously he should, as god of the royal city, enjoy pre-eminence. Accordingly, while the old story of creation was retained, it was now explained that Ptah was 'the heart and the tongue' of Atum; it was he that conceived Atum's thoughts, and it was he that, by giving utterance to those thoughts, brought them into existence as phenomena; more than that, it was Ptah who first conceived the idea of Atum and by naming him created the creator. By Ptah, by his thought and speech, were all things made that were made—the gods, the earth with

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its provinces and its towns allotted to the several gods, all human arts and crafts and all moral issues; 'thus it was discovered and understood that his power is greater than that of the other gods'. Nothing of the old order is explicitly rejected, but it is made to assimilate a new element which is in fact contradictory; and Egyptian theology was prepared to accept both versions without question.

In very much the same way, when Heliopolis became the capital city, Rê the Sun god, whose seat was at Heliopolis, is identified as Rê-Atum, both sun and creator; at a much later date, when Thebes was the royal city of the empire, Amon-Rê acquires such overwhelming importance that other gods find it expedient to bolster up their dignity by assimilation to him, and we hear of Khnum-Rê, Sobek-Rê, Montu-Rê and Rê-Harakhte; there is no loss of identity, but by the use of the name Rê the local deity obtains for himself the virtue which is in Rê just as a magician uses a man's name to gain control over him.

The pyramid texts, dating from the Fifth and Sixth Dynasties, on which we have to rely for our knowledge of Egyptian religion in the early times, show that already in the Old Kingdom the principal part in it was taken by sun-worship, and next in importance is the cult of Osiris and the deities associated with him. But it must be remembered that these texts are purely funerary in purpose, intended for the use of the dead Pharaoh in leaving this world and in entering and dwelling in the next; they do not, therefore, cover the whole field of belief, and they do not necessarily reflect the beliefs of ordinary men. The parts dealing with funerary ritual and tomb-offerings, of course, apply only to the funerals of kings and have no general significance. But the great bulk of the texts is a jumbled conglomerate of extracts from myths and legends, charms and prayers, some of them certainly of great antiquity, going back in substance to pre-Dynastic times, and from these it is possible to gain some idea of the character of the earliest religion.

The substratum of that religion was certainly a totemistic system.[11] The 'standards' of the nomes or provinces of ancient Egypt represent the actual totems which were revered in and gave their names to the different nomes when the Nile valley was parcelled out into some forty independent little principalities; each of those had its local god (the 'town god' of later times) who probably was by origin no more than the non-human thing—beast, bird, plant or whatnot—from which the leading clan fancied itself to be descended. This much is certainly true, but to assert, as some have done, that 'sun-worship, and indeed the whole cosmic system of which it is typical, was secondary in Egypt, imposing itself upon a substratum of totemism', is to exaggerate grossly. The totem was a clan affair, owing its territorial significance to the territorial ascendancy of the clan affiliated to it, and it was in no way inconsistent with other beliefs. The early Egyptian, as has been said above, recognized the personality behind every phenomenon, and the belief that he was himself descended from an ibis did not prevent him from seeing

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god in the sun or in the moon; what he did tend to do in the course of time was to identify his totem with one or other of the gods, so that the falcon becomes Horus, a solar deity, and the Moon god Thoth takes on the form of an ibis. Just as the political unification of Egypt left the nomes in existence as administrative units, so a sufficient uniformity of religion could be brought about without any brutal deletion of the primitive totem-cults or any forced imposition of sun-worship; the sun-worship was already there, and if the new creed and the old were in any way inconsistent or contradictory nobody could object to that; they were both true.

A change was indeed inevitable, because totemism as such is suited only to primitive conditions in which the clan is the largest social unit. As society becomes more complex and its horizon widens, the theory of common descent from a non-human ancestor loses grip and the greater gods, recognized by one's neighbours equally with oneself, come into their own; the totem is either identified with one of those gods or relegated to the sphere of mere heraldry. The change must have been going on throughout the pre-Dynastic period and when the first Pharaoh insisted upon the pre-eminence of Rê—which he would naturally do seeing that his totem, the falcon, had become Horus and he himself was 'the Horus'—he did nothing to shock his subjects; it would be more true to say that he merely confirmed what was already the popular belief.

Egyptian religion was still, at that time, in a very fluid state. The pyramid texts show that there was a very rich—and terribly confused—mythology, some of the characters of which were to become the gods of Egypt while others were to remain merely mythological, possessing neither temple nor form of worship. There were temples, certainly, but there was no order of priesthood; the local nobleman (i.e. the head-man of the clan) acted as priest on the necessary occasions and was assisted by a body of laymen who took it in turn to serve in the temple for a stated period. Sometimes the god might be represented by the old totem now identified with him—the hawk, the crocodile, the jackal or the cow—but this was no more than a symbol; animal-worship as such was unknown and the cult marks the late decadence of Egyptian history.[12] But there is really nothing to show quite how the early Egyptian imagined his gods. It is a curious fact that in the vast mass of pre-Dynastic and proto-Dynastic material recovered by archaeology there is, apart from the nome standards, scarcely an object that can confidently be said to illustrate religion. There are no figures of deities, practically no scenes of mythology or of ritual[13] such as we find in Mesopotamia in the Jamdat Nasr period; the available evidence suggests that the formal service of the gods played a very small part in the life of the ordinary inhabitant of the Nile valley, whatever beliefs he may have held privately. If this was indeed so, it was perhaps but the natural result of the circumstances of his daily life. He knew that the sun would shine almost every day from a clear sky; he could confidently depend upon the annual flooding of the Nile just at the time when



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seed was due to be sown, and he could count upon the rich soil to give him an ample harvest; it was quite clear to him that kindly gods had made everything on earth for man's enjoyment, and therefore as long as he was upon earth he need not trouble himself very much about the gods; their goodwill could be taken for granted. On the other hand, the evidence amply proves how great a part was played by his belief in a future life.

'The two central features of the Egyptian scene were the triumphant daily rebirth of the sun and the triumphant annual rebirth of the river. Out of these miracles the Egyptians drew their assurance that Egypt was the centre of the universe and their assurance that renewed life may always be victorious over death.' From the earliest times men had been accustomed to place in the graves of their dead the things that they had used and enjoyed in this world and would equally require in the next. About the existence of that world there was no doubt whatsoever. In the early days, as is clear from the pyramid texts, the abode of eternal blessedness was in the northern section of the heavens where the circumpolar stars swing round the North Star and never disappear below the horizon but are those that 'know no destruction'. Later, as sun-worship became more dominant, the Elysian Fields were shifted to that underworld through which the sun passed at night to be reborn in the east; it was the sun that gave promise of life renewed, and for man to share in that he must follow the sun's course; so Dat, lying between the waters of Nun whereon the earth floats and the counter-heaven which is the term of space, becomes the realm of the immortal dead.

The inconsistencies and contradictions which the Egyptian mind accepted with such equanimity make it difficult to discover quite what was his conception of the future life, and here the pyramid texts are apt to be misleading. In them the Osiris cult is only less important than that of the sun; but that is because the pyramids were the tombs of kings and the king was himself a god and Osiris was himself a dead king or at least a personification of dead kingship. In the texts the king and the god are identified, so that the dead Pharaoh is named 'the Osiris King' and receives his funeral rites from the hands of his son Horus, incarnate, for the occasion, in the person of the living Pharaoh who succeeds him. That is correct and natural for Pharaoh, but the tombs even of nobles of the Old Kingdom show no such predisposition for the Osiris cult, and the ordinary Egyptian did not associate Osiris with himself; *he* was not joining the Assembly of the Gods but was beginning a new life very similar to that which was ended.

That the Egyptian of the Old Kingdom believed firmly in a future life is certain, but it is extremely difficult to say quite what the belief was. He recognized, of course, the fact of physical death, but he was unable to conceive of any form of existence other than that of physical life;[14] the difference, therefore, between the living and the dead was one of degree rather than of kind. The dead lived, but in a less real manner. They required food and drink, just as they had done in this world, and a prudent man would do all

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that he could to assure that provision was regularly made for his soul's sustenance; but since it was patently true that the dead could not and did not eat or drink, it was the spirit of the offering rather than its substance that mattered, and a loaf of painted wood was as satisfactory as a wheaten loaf, the wine-jars and the trayful of meats carved in relief on the walls of the tomb chamber were as sustaining as actual meat and wine, and had the advantage of being incorruptible. The dead man was actually alive in his tomb. That was the reason for the care taken to preserve the body from decay or destruction, and, because decay was only too probable (for proper mummification was not practised in this early period) a portrait-statue was immured in the chapel of the *mastaba* tomb which in case of need could act as the body's substitute. For the body was indispensable. Every man at his birth received a *ka*, which co-existed with him throughout his life and after death; the word might be translated 'vital force', or 'character' or 'individuality' (so ill-defined are the Egyptian conceptions);[15] but in any case the *ka* plus the body is the man, and if body and *ka* are separated the man ceases to exist. Another aspect of or element in the man's individuality is represented by the *ba*, which generally assumes the form of a human-headed bird who grasps the symbol of life and, by holding this to the nostrils of the dead, assures his continued existence as an *akh*, a 'glorious one' still functioning as in life, the *akh* also, like the *ka* and the *ba*, being not something separate from the man but himself as conditioned by the future life, the man *sub specie eternitatis*.

The Egyptian was not given to reflective thought and was not in the least worried by the fact that his ideas concerning the phenomena of reality were hopelessly incompatible. He could not but recognize the fact of physical death, but because he hated it he refused to admit it; the dead was not dead, he was alive. A curious illustration of his belief in the literal truth of the dogma is afforded by some of the Second Dynasty *mastaba* tombs at Sakkarah in which there are lavatories provided for the occupant; it was impossible for him to conceive of any form of existence other than that of normal human life, and since that meant the life of the body, the body was essential to immortality. It was not the case that the body perishes and the *ka*, or the *ba*, survives, nor yet that the body must be preserved or a portrait figure be substituted for it in order that the disembodied spirit may enter into it should it choose to revisit the tomb. The body and the *ka* are inseparable, and it is the man himself who in the tomb continues his physical existence and, leaving the tomb-chamber, can pass through the false door into the offering-chamber of the *mastaba* to take part in the mortuary banquet.

An outstanding feature of the elaborate tombs of the Old Kingdom nobility is the carving upon their chapel walls. Always the principal figure is that of the tomb's owner, dominating by his greater stature the entire scheme of decoration. In front of him rows of reliefs represent the characteristic scenes of Egyptian life; labourers plough the fields and harvest the crops; tally-clerks keep check of the sacks of grain stored in the granaries; the

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herdsmen drive the cattle from the pasture; there are scenes of duck-hunting in the Nile marshes and of fishing in its waters; servants prepare the meals of the household and make ready the banquet; there are workshops of the goldsmith and the maker of stone vases, the ship-builder's yard and the open-air market; before the eyes of the dead man are pictured all the familiar activities of the world as he knew it.

These pictures are not in any sense a memorial of the wealth and luxury that the man had enjoyed in his lifetime. It has been supposed that they represent scenes in the next world, characteristically conceived as being a replica of this, and that their presence in the tomb would, by sympathetic magic, ensure for the dead man the enjoyment of just such things as he had most enjoyed in life—there, too, he would be the lord of broad acres, owning the cattle so realistically figured on the tomb walls, feasting and hunting just as the reliefs showed him doing. Such a belief does seem to have been developed in the later phases of Egyptian history when men were obsessed to a far greater extent with the thought of another world; and the germs of it may well have been present, even in the time of the early dynasties, in the muddled minds of the Egyptians. But the original purpose of the pictures was different.[16] They are not abstract symbols; they are realistic excerpts from ordinary life, objective, light-hearted and full of bustling activity; but the owner of the tomb plays no part in them; schematized and hieratic, he looks on at all that is done, from the outside; as the inscriptions say, 'he watches'.[17] He is not dead. Living in the tomb he looks on at life as he has known it, seeing through the pictures the living world in which—one hates to admit the fact, but one cannot escape it—he no longer can play a direct part. The early Egyptian was not very deeply interested in another world to which man may go after death; the whole of his elaborate funerary ritual aimed at securing the continuation of life in this world subject only to those somewhat different conditions which the fact of death imposed.

Such a creed is the creed of a prosperous and a happy people who enjoyed life so whole-heartedly that they could not endure the thought of losing it. Our evidence for it is necessarily one-sided; it comes from the tombs of the rich nobility who could afford an elaborate ritual, and we cannot be sure as to how far their belief was shared by the poor, for whom costly burial was impossible; presumably they got as much happiness as they could out of life and vaguely hoped for the best thereafter. But a creed based on prosperity is peculiarly vulnerable. When the Old Kingdom collapsed, when, as the sage Ipuwer said in his *Admonitions*: 'The desert has spread throughout the land; a foreign tribe from abroad has come into Egypt; blood is everywhere. Gates, columns and walls are consumed by fire. No craftsmen work. Men are few, women are lacking, and no children are conceived. All is ruin'; when, too, men saw that the old precautions against death had proved futile, that the tomb-chapels of the nobles were falling to decay and even the pyramids of the

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Pharaohs were plundered, then religious belief could scarcely fail to be affected by the changes in the world.

The immediate effect of the disastrous fall of the Old Kingdom was a wave of utter pessimism so overwhelming that one of the literary documents of the period, the 'Dialogue of the Man-weary-of-life with his Soul', actually ends with a panegyric on death; a constant phrase on the grave stelae of the previous age had run, 'O ye who love life and hate death'; now we read, 'Death is before me today like the longing of a man to see his home when he has spent many years in captivity'. There could scarcely be a more striking reversal of values than this, but it is not purely negative; it does at least imply that, if life be miserable, death may be the beginning of something better—'Death is before me today like the convalescence of a sick man, like going forth after an illness'. The Egyptian, as we have seen, had always cheerfully assumed that the gods were on the whole kindly beings; if now the whole fabric of society which summed up his ideal of happiness had broken down that was, of course, the act of the gods; but were the gods to blame, or had there been something wrong with society? A sense of moral unworthiness as the cause of misfortune begins to show itself.

This was not a revolutionary change in Egyptian thought but it was a revelation of Old Kingdom ideas, new in the emphasis which it laid on ethics. An Old Kingdom writer could hardly have said, 'More acceptable is the character of a man just of heart than the ox of the evil-doer'; still less could he have put into the mouth of Rê as the god of creation this quite remarkable statement of his purpose for man:

> I made the four winds that every man might breathe thereof like his fellow in his time.
> I made the great flood waters that the poor man might have rights in them like the great man.
> I made every man like his fellow. I did not command that they might do evil, but their hearts violated what I had said.
> I made that their hearts should cease from forgetting the West, in order that divine offerings might be made to the gods of the provinces.

Here is a definite assertion of human rights. In theory, that is, in accordance with the divine plan, opportunity should be equal for all; men were created equal, and the social inequalities of the world are the result of man's violating the will of the Creator. But that perversion is limited to this world. Rê calls upon all men to fix their thoughts upon 'the West', the realm of the blessed dead, where the divine purpose holds good and there is no distinction between rich and poor, between Pharaoh and the peasant. The Pharaoh of the Old Kingdom was a god and on his death entered as by right the heaven of the gods; now every Egyptian can enjoy eternity on the same terms, every Egyptian when he dies becomes Osiris.

There was an old legend according to which Horus at one time had been

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hailed by his uncle Seth before the tribunal of Rê; he stood his trial and was acquitted as being 'true of voice' or 'justified'. Similarly the dead man now identified with Osiris had to be judged by Rê and the tribunal of the gods before he could enter into the state of blessedness; and this trial was conducted on ethical lines, that which was evil in the man's life being weighed in 'the balance of Rê' against that which was good. In theory at least morality and religion are here made interdependent: 'As for the court who judge sinners, mark thee that they will not be lenient on that day of judging miserable men, in the hours of performing their function. Wretched is he who is accused as one conscious of sin. Put not thy faith in length of years, for they behold a lifetime as an hour. A man survives after death. His deeds are laid beside him for treasure. Eternal is the existence yonder. He who has made light of it is a fool. But he who has reached it without wrong-doing shall exist yonder like a god, stepping forward boldly like the lords of eternity.' Such are the instructions given to his son by a Pharaoh of Egypt, probably of the Tenth Dynasty, and on the strength of such we can assert that in the troubled days between the Sixth and the Twelfth Dynasties religion reached a moral height which it had not attained before. Of the Egyptian pantheon two gods were now predominant, the ancient Sun god Rê who had made all men equal and cared equally for all, and Osiris, 'justified' by *ma'at*, by uprightness, righteousness and truth; and salvation was open to all men who followed virtue, so that they became as gods. But the royal instructions cited above are in their character unique amongst the documents of the period; the lesson had not yet been generally assimilated and the coffin texts as a whole fail to recognize any close connection between religion and morals, and, although the good seed had been sown, the young growth was doomed to be choked by 'the care of this world and the deceitfulness of riches'.

With the establishment of the Twelfth Dynasty and the accession to the throne of Amenemhet I, described by a contemporary writer in terms of almost Messianic prophecy, prosperity returned to the Nile valley. Internal peace was assured, civil order was maintained, abundant wealth poured into the country; life was again worth living, and a good life was all that a man could ask. The Egyptian had always loved life and had done his best to defy death; now, with the extension of the Osiris cult, death lost much of its old terrors, since every man could become a god, and since he could not conceive of another world except in terms of this, he would continue to enjoy in the hereafter all the good things with which he had surrounded himself here. Guaranteed immortality had given increased value to the individual; he could claim rights for himself, but he was obliged also to recognize obligations to others; the Middle Kingdom saw a greater degree of social consciousness than the Old Kingdom had known, and in the tomb texts much emphasis is laid on *ma'at*, the dead man's righteous dealing with his fellow-men, the virtue that would weigh heaviest in the 'balance of Rê' at the last judgement. Unfortunately virtue is not always consistent with the acquisition of material

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prosperity; the latter could not be forgone, but the last judgement could not be disregarded. The practically-minded Egyptian solved the dilemma by the use of magic, against which the gods themselves are powerless. A set form of words, accompanied by a set ritual of action, can, if properly used, exercise compelling force. Already in the old pyramid texts the dead king had been instructed in the use of certain utterances whereby he could propitiate the malevolent beings of the other world; now the general public shared the privileges of the ancient kings. However much evil a man had done in his lifetime he could face the judgement of the gods with equanimity provided that he knew the right thing to say and the right way of saying it; in case he should forget, the formula was written on the inside of his coffin and was a sure passport to the realms of the blessed dead. 'If a man says this section', the text states explicitly, 'he shall enter into the West after he has gone up. But as for anyone who does not know this section, he shall not enter in.' No good deeds will atone for ignorance. Later, under the Eighteenth Dynasty, the whole thing was stereotyped, and the apposite portions of the Book of the Dead were placed as a matter of routine in the coffin so that every awkward question put by Osiris (who by that time was regarded as the Judge) was countered automatically and the trial of the soul was reduced to a farce. Obviously this meant the complete divorce of morality from religion. A prudent man would observe the rules of social justice and right dealing just so far as was expedient and would disregard them when he could do so safely and to his own advantage; he had no need to take the divine sanction seriously.

Of the two cults now predominant that of Osiris affected most the individual citizen, involving as it did constant forethought and a great expenditure of money on the preparation of his funeral rites; but since he was himself to be Osiris all this expenditure was purely self-regarding; its motive was not ethical but the safeguarding of his own future enjoyment. At the same time the institution at Abydos of festivals at which the Osiris myths were presented in the form of 'passion plays', to which the public was admitted and even participated in them, gave to the cult something in the nature of a popular religion. But ecclesiastical religion played a very small part in the average Egyptian's life; sun-worship, the most ancient and from now on the most important cult in Egypt, was the concern not of the individual[18] but of the state.

In the old days the shrines of the local gods had been very humble affairs and the priests attached to them had enjoyed but small authority. Only in the time of the Twelfth Dynasty did the temples grow in actual size, in the numbers of their attendant personnel, and in landed property, thanks chiefly to the munificent gifts made to them by the successful Pharaohs; during the same period and through the same means the Sun god was able to eclipse all the other deities of Egypt. The Pharaohs of the Twelfth Dynasty were natives of Thebes, and the local god of Thebes was Amon, one of the forms of Rê.[19] The divine Pharaoh, claiming to be the actual son of the Sun god, natur-

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ally gave precedence to his father; Amenemhet I at once began to build a new and more pretentious temple of Amon at Thebes, Sesostris I enlarged it and also built a new temple of Rê at Heliopolis; each ruler in turn prided himself on adding to the majesty of the god who was the ancestor and patron of his house, and in order to share in the royal favour the old local gods found it expedient to identify themselves with the sun, so that the Crocodile god Sobek became Sobek-Rê. By the time when the Twelfth Dynasty ended, the Sun god's position was so firmly established that his cult could survive even the disastrous phase of civil wars and foreign conquest that followed. Fortunately Thebes itself, although forced to pay tribute, did not fall directly into the hands of the Hyksos invaders who 'overthrew that which had been made, while they ruled without Rê', and it was a Theban king who ultimately expelled the barbarians from the Nile valley and pursued them into Syria; the triumph of Egyptian nationalism and the founding of the Egyptian empire were the triumph of Amon-Rê.

Rê had always been the chief god of the Nile valley. Now Pharaoh, son of Amon-Rê, had extended his own and his father's dominions far beyond the confines of Egypt, and the realm of the Sun god included Palestine and Syria right up to the banks of the Euphrates. Each fresh victory had meant further glorification of Amon-Rê, the enlarging of an old temple or the building of a new; each newly gained province sent its yearly tribute to the god's already overflowing treasury, and his priests, trained in the College of Priests at Thebes, forming now a professional caste, acquired ever more political and economic power. In the anarchy that had followed on the fall of the Middle Kingdom the old nobility had disappeared; the higher ranks of the government service were no longer filled by the members of a privileged and more or less hereditary class but were appointed by the king at his pleasure; and since the priesthood enjoyed a better education than the layman and was *ex officio* in closer communion with the god of the empire, priests were the most obvious candidates for appointment. A close corporation of the sort, holding many of the great offices of state, immensely rich, owning vast landed properties which were steadily increased by the custom of assigning lands to the priesthood for the upkeep of funerary rites in perpetuity (it is calculated that at one time the Temple lands amounted to not less than one-fifth of the whole area of Egypt) and therefore having direct control of a vast personnel, a corporation, finally, backed by the divine sanction, was invested with such power that it might easily threaten the independence of Pharaoh himself. This actually came about under the Twentieth Dynasty, when the nominal ruler of Egypt was no more than a puppet in the hands of the priesthood, but the danger was apparent long before that.

Under Amenhotep III a high priest of Amon had been the chief treasurer[20] of the kingdom, and another had been Grand Vizier; towards the end of his reign, however, the king appointed a new Grand Vizier, Ramose, who was not a priest; and he also introduced a change of worship, both actions

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probably being aimed at undermining the power of the Theban priesthood. In that imperial age, when Pharaoh's dominions seemed to have no limits in space, the Egyptian had tangibly before him a world-concept which naturally led on to the idea of a world-god. That that god was the sun no one could doubt, but was it the old Rê of Heliopolis, or Amon-Rê of Thebes, or any one of the many local gods who by now had hyphenated their names with that of Rê and claimed his prerogatives as their own? Amenhotep[21] may have thought of by-passing these sectarian pretensions when he built a chapel at Heliopolis in honour of Aton, which was an ancient name for the actual sun, added to his own name the adjective 'dawning like Aton', and even approved of Aton being described as 'the sole god', very much as, more than two hundred years before, the Semitic Pharaoh of the Hyksos, Apopi III, took Sutekh for his Lord and 'served no other god in all the land but him'.

Amenhotep IV* followed in his father's steps but quickly outdistanced him. Aton-worship was to be the state religion. Aton was identified with the old Rê to the extent that he was the sun, and his High Priest (the Pharaoh himself) used the same title, 'the Great Seer', as was used by the High Priest of Rê at Heliopolis. But Aton was not merely the sun; his name, the word Aton, was employed instead of the old word (*neter*) to mean 'god', and Aton himself was the vital heat which, coming primarily from the sun, is the source of all life and it was through the rays of the sun that he was active. This was symbolized, for purposes of representation, by depicting the sun as a disk from which there radiated downwards divergent beams, each ending in a human hand; the power issuing from its celestial source finds at the end a human contact. The merit of the symbol was that everyone could easily grasp its meaning; the old Egyptian symbols for the sun, the falcon or the pyramid, were familiar to Egyptians but conveyed nothing to those Asiatic subjects of the empire who now had to be considered no less than the natives of the Nile valley; the god of the empire had to be recognized by all alike.

At the beginning of his reign the young Pharaoh, for all his enthusiasm, seems to have observed a certain moderation; the worship of all the old gods of Egypt was tolerated, although now vast sums of money that had formerly gone into the treasury of Amon-Rê were diverted into that of Aton. The Theban priesthood, however, were furious, not only because of the loss of revenue but also because of their exclusion from the high offices of state, for those were distributed at the king's pleasure and it was only too clear that his favours were reserved to adherents of the upstart faith; and either in over-confidence or in desperation they attempted to oppose the heresy. But Amenhotep IV was not only a religious fanatic. Little more than a boy in years, he was an absolute monarch strengthened by the enormous prestige of his house and the material resources amassed by his father, and by character and training he was a self-centred egoist; the mere idea of opposition to his will drove him into frenzy. By a royal order all the old gods of Egypt were

* Usually referred to by the name of Akhenaton as explained below.

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proscribed; the priesthoods were dispossessed, the temple services were forbidden, and the names of the gods were erased from reliefs and sacred monuments. Even the word 'gods' where it appeared in an inscription was often hacked out, and the mortuary chapels, the tombs and the statues of the king's ancestors were violated without mercy, and because his father's name was compounded with that of Amon even that name had to be obliterated from the walls of the great buildings wherewith he had enriched Thebes. Thebes, as the headquarters of Amon, was in any case hateful[22] and now, with all the monuments which he had defiled forming a standing reproach of his impiety, Pharaoh decided upon a complete break with the past. He changed his own name to Akhenaton, and set up a new capital of the empire, Akhetaton, on a virgin site on the Nile bank nearly three hundred miles below Thebes; so urgent were Pharaoh's orders that already in the sixth year of his reign the mushroom city was an accomplished fact, his gay palaces and pleasure-pavilions in full use, and in a huge temple the 'Great Seer' could lead the services in honour of Aton, the sole god.

Pharaoh's devotion to the Aton was, unquestionably, enthusiastic and exclusive, and the famous hymns supposed to have been composed by him illustrate that devotion in its highest aspect, in language astonishingly like that of the Hebrew Psalm civ. In their insistence on the goodness and loving-kindness of the Creator the Aton hymns carry much farther that conception of deity which was first apparent in the religious literature of the Middle Kingdom, and they show a tendency to monotheism much more clearly marked than was the case in, for instance, the hymn of Amon-Rê of a hundred years earlier; there Amon-Rê 'the righteous one' is hailed as chief of all the gods, unique amongst the gods, father of the gods and creator of all things; but in Akhenaton's hymn Aton is 'the sole god, whose powers no other possesseth, beside whom there is no other'. This indeed looks like pure monotheism, but it must be remembered that in the earlier days of the revolution the cult of the other gods of Egypt was permitted and the intolerance of the later stages was due as much to pique as to conviction—just as there was but one Pharaoh ruling the empire so Pharaoh's god must be the sole god of all his subjects.

But in any case Aton did not stand alone; Akhenaton was himself a god, as his forefathers had been, and that from the beginning of time—'Since thou didst establish the earth', he says in his Aton hymn, 'thou has raised up [mankind] for thy son who came forth from thy limbs, the King, living in truth'. His vizier Nekht calls his master 'the god who makes man, the god who formed all men'. That parade of domesticity which is repeated time and again in the reliefs and paintings of the royal city is not meant to bring the Pharaoh down to the level of ordinary man; rather, so much is he a god that the most intimate scenes of his life acquire divinity and can worthily replace the representations of other gods and the ritual of their worship which had adorned the temples of an unregenerate age.

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Akhenaton's creed was monolatrous rather than monotheistic. Moreover, however elevated in its expression and poetical in its sentiment, it contains only a sensuous beauty and is wholly unethical; 'the king', says Professor Breasted, 'has not perceptibly risen from the beneficence to the righteousness in the character of God, nor to His demand for this in the character of men'. Even the Pharaoh's constant emphasis on *ma'at* does not bear witness to any moral advance. The usual translation of the word as 'truth' is misleading. In the sense of 'justice' it was equally prominent in the Middle Kingdom, when daily the ritual was observed of the king presenting to the god the symbol of the goddess Ma'at; to Akhenaton it may have had the further meaning of 'realism'—that whatever *was* was right and proper, always with the proviso that whatever *was* derived ultimately from the king himself; no other could know the divine Aton 'save thy son Akhenaton; thou haste made him wise in thy designs and in thy might'. In the field of art *ma'at* became an exaggerated realism, and the sculptor (whom his Majesty himself taught) was obliged, in the interests of 'truth', to abandon all the traditions of court propriety and faithfully portray the king's ungainly and malformed person; but there was no humility involved in this—rather the reverse; the king *was* deformed, and therefore deformity was right and proper, so much so that an ambitious courtier would in a portrait of himself suggest that he, too, suffered from—or could boast—a like deformity. The phrase 'living in truth' invariably attached to the king's name carried very little moral significance.

The 'teaching of Pharaoh' had but small positive effect on his subjects. It was, of course, accepted with blatant enthusiasm by the courtiers who were bribed to conformity by the gifts of high office and gold in abundance—'Hang gold at his neck before and behind, and gold on his legs; because of his hearing the teaching of Pharaoh concerning every saying in these beautiful seats which Pharaoh has made in the sanctuary in the Aton-temple in Akhetaton'. The ordinary citizen of the new capital conformed because his livelihood was involved, but the local craftsmen continued to mould and the local people to wear glazed amulets in the form of Bes and Taurt, Hathor and Osiris; and even before the city was deserted one Ptah-may, 'praised one of the Aton', could set up in his funerary chapel a stele with prayers to the goddesses Isis and Shed and an inscription in honour of Amon 'the good ruler eternally, lord of Heaven, who made the whole earth'. A second Amon inscription from Tell el Amarna shows that Ptah-may was not alone in his divided allegiance, and outside the boundaries of Akhetaton the effect of the revolution on the Egyptians must have been almost entirely negative. They saw the old temples defaced and closed, the state priesthood disestablished and an interdict laid upon the public services of the gods, but there was no one to teach them anything about the new religion which a royal edict had brought into being; in itself the idea of a 'sole god' did not appeal to them, for they were accustomed to, and liked, gods in plenty; they were therefore driven back more than ever to the minor cults and superstitions which had always meant more to

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the humbler classes of Egyptian society than did the formalized worship of the state.[23]

With the disappearance of Akhenaton the whole of his religious movement disappeared also; the capital was moved back to Thebes, the cult of Amon-Rê was revived with greater splendour than before, and the very name of Aton was banished from the language of orthodoxy. But it would be wrong to say that it had had no effect upon religion. Sir Alan Gardiner insists on 'the ever-growing tendency to monotheism manifest in all Egyptian writings' of post-Akhenaton times, but such a tendency, important as it must be held,[24] was confined to the small body of thoughtful and more or less philosophic writers; only in a few Theban votive or memorial stelae does there appear any evidence suggesting that the Aton worship may have lastingly influenced the traditional beliefs of ordinary people. That in these few texts there is sentiment of a high order cannot be denied. 'Beware of Amon', runs one of them. 'Repeat his name to son and to daughter, to great and to small. . . . Tell of him to the fishes in the stream and to the birds of the air. . . . Thou art Amon, the lord of him who is silent, coming at the call of the poor. I called to thee when I was in trouble, and thou didst come and didst save me; thou didst give breath to the poor and didst rescue me who was in bondage. . . . I made for him praises to his name because of the greatness of his might. I cried, "Lord of the poor" before him in the presence of the whole land for Nebamon when he lay sick and about to die, being in the power of Amon because of his sin. . . . While the servant was wont to sin yet was the Lord wont to be gracious. The Lord of Thebes spends not a whole day in wrath. His anger lasts but a moment and there is nought remaining.'[25]

If such a prayer as this can indeed be derived from the Aton worship it has gone very far beyond anything that Akhenaton taught, and it has gone very far beyond the somewhat vague belief held in the time of the Middle Kingdom that future happiness must in some degree depend upon present virtue. But it was the prayer of a minority neither influential nor permanent,[26] and we shall look in vain for this conception of a moral and a merciful god in the orthodox religion of Nineteenth Dynasty Egypt. There the development was to absolute sacerdotalism; by a judicious use of the oracles which they controlled the priests of Amon were in time able to control the whole policy of Egypt and finally to transfer to their own order the temporal power of Pharaoh. For the populace, the cult of Osiris more than held its own, but this, too, was a matter of magic—the mechanical assurance of the dead against the dangers of the passage to eternity—and had no ethical or spiritual value. Under all the pomp and splendour of liturgical and funerary ritual there was but a dull and lifeless formalism. The exuberant individualism of the Old Kingdom had given place to man's passive submission to the established order of things in this world, and if he could hope at all for better things in the next, they were to be won not by individual merit but by the priestly spells which could bind, or cheat, even the jealous gods.

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## THE HURRIANS AND THE HITTITES

The reasons for treating these two peoples under a common heading have been given in Chapter I and are well summarized by Dr Speiser: 'The relations between the Hurrians and the Hittites prove to be unusually intimate, a fact which is abundantly reflected in virtually every phase of the Hittite civilization. Indeed, we are justified in speaking of a Hurro-Hittite symbiosis which for closeness and effect is second only to that blend of Sumerian and Akkadian elements which constitutes the composite culture of Mesopotamia.'[27] This is generally true, and not least so in the sphere of religion.

Of the indigenous religion of the Hurro-Hittite area little is known.[28] From Tell Asmar, the easternmost border of the Hurri land, from Anatolia and, outside Asia, from the Cycladic islands and from Crete, there come the curious 'violin-shaped' idols of the earliest Bronze Age which can only be taken to be symbols of a mother-goddess, the goddess of fertility. Representations of snakes, almost equally widespread and culminating in the sophisticated snake-goddesses of Knossos, may imply a cult of the nether gods. The enigmatic metal 'standards' of Alaca Höyük—sometimes accompanied by figures of bulls or stags—may mean sun-worship, and the animals certainly reappear in later times as the attributes of individual gods, the bull being the regular companion of Teshub, the Lord of the Storm, and the stag that of a god who is apparently the protector of wild animals and therefore the hunter's god. That elements of the primitive religion should survive in after ages, taken over by the Hurrite and Hittite invaders, is but natural, and unquestionably both peoples were peculiarly ready to adopt the gods with whom they were brought in contact. The eastern Hurrites, living amongst or in the neighbourhood of the far more civilized Sumerians and Akkadians, assimilated their own god, Teshub, with the Mesopotamian deity Adḫu, adopted the god Zababa, and took over wholesale the mythological legends of Sumer; the western branch, mingling with the less advanced Syrians, were content to accept the local West Semitic deities as their own gods masquerading under other names and so could adapt themselves to local practice. But the Hittites were even more acquisitive. By the time of the New Empire, when documentary evidence is for the first time available, we find that the Hurrian goddess Ḫebat (the consort of Teshub) and the Mesopotamian Ishtar were both reckoned amongst the 'gods of the palace' of Suppiluliumas; the personal seals of Muwatallis, Suppiluliumas's grandson, mention two forms of Teshub, and Teshub and Ḫebat of Aleppo are described as gods 'of Hatti', as also are some of the Babylonian deities; even in the great rock-sanctuary of Yazilikaya, adjoining the Hittite capital, the hieroglyphic inscriptions give Hurrian names to the gods and goddesses worshipped there.

Of course these foreign deities were superimposed upon a native Hattic religion. The chief place in it was held by the Sun goddess of Arinna—but

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since she has two attributes, as dissimilar as the dove and the lioness, she would seem to be already a synthesis of two or more deities. The Sun goddess is the spouse of the Storm god or Weather god, a deity whose powers and direct influence upon man's life could not but be recognized by peoples whose homes were in the mountain areas of Asia Minor. The Weather god is undoubtedly a synthesis, including in his identity a number of what were once independent gods, for every important Hittite city had a Storm god of its own, called after the city's name; in time all these are either merged in the person of the national Storm god or combine to form a Storm god who is at the same time a Sun god and ranks as the son of the Sun goddess of Arinna and her Storm-god husband. Judging from the evidence of Alaca Höyük we may class as indigenous the Stag god who is protector of wild life; such also may be Telepinus, the god of vegetation who, like Adonis, disappears from the earth and has to be sought and brought back in order that life may go on; such too Kubaba, the Mother goddess, whose cult was carried by the Hittites as far afield as their armies could at any time advance so that whereas in the east she had a temple on the acropolis of Carchemish, in the west her statue looks down from Mount Sipylus upon the Gulf of Smyrna. The Hittite scribes speak of 'the thousand gods of the land of Hatti'; of course many of these were really local variants of the same god who preserved their identity—and their importance—as being the patron deities of their several cities; thus there were Storm gods innumerable, but they could scarcely be differentiated, except by the names of their city temples, from the Storm god of Hattusas who is called 'King of Heaven, Lord of the land of Hatti' and represents the nation just as Amon represented Egypt. At the same time the official attempts at syncretizing the gods did not always take into account genuine differences of function, with the result that the same god may be a Storm god in one place and a god of agriculture or of war in another, the different attributes of divinity merging insensibly one into another. The pantheon was strangely eclectic and confused, but it resulted from and reflected the composition of the Hittite people, which was not a race apart but a confederacy of tribes, speaking different dialects and different languages, some of them undoubtedly Anatolian by origin, others Indo-European immigrants coming probably by way of the Caucasus. About 1500 BC a further complication was added when the Aryan kingdom of Mitanni established itself in the Hurri country and the Aryan gods Indra, Mithras (Mitra), Varuna and the Nasatya joined the Hurro-Hittite pantheon; of these, Mithras long survived in the Middle East and was destined to play an important part in the religious developments of the early Christian era.[29]

The rich archives of the Hittite empire found at Boğazköy give much detailed information regarding the cult. The gods, of course, had their temples and their attendant priests, maintained by a levy raised not from the individual citizens but from the king, the palace revenues and the municipal governments. For the daily sustenance of the god the provision was simple—bread,

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wine and beer; the god's portion was strictly reserved to himself, but the rest was eaten by the priests inside the temple. Any Hittite citizen could demand to be fed at the god's expense, and he would be admitted to the temple and given food and drink; but only if what was provided for the day exceeded the requirements of the priests might they take anything away for the benefit of their families. The rules applying to the priests were strict, especially as regards physical and ritual cleanliness, and punishments for the breach of rules were severe, including the death penalty for various offences; but the priesthood as such does not seem to have exercised any undue authority in the state; they lived at home, not in the temple precincts, and married and had families like the ordinary citizen; only a few of the upper order, who participated in the great festivals, enjoyed a certain precedence.

The chief priest was the king. The Hittite ruler was not a god, as was the Egyptian Pharaoh, nor yet the mortal agent and representative of the god, appointed by him,[30] as was the king of a Sumerian city state. The Hittite monarchy was elective; a prince was designated by his father as his successor but only became king after he had been approved by the competent assembly consisting of the royal family, the nobles and the warriors. The king personifies the nation. Because the gods are the masters of the universe and men are but their servants whose whole well-being depends upon the goodwill of the gods, the service of the gods is the first duty of the nation and, since the nation is embodied in the king, the king's prime function is to assure that goodwill and so to secure the prosperity of all his subjects. In theory, therefore, all sacrifices were performed by the king. In practice, of course, this duty had to be to a large extent delegated to officers appointed by him, but there were certain festivals so important that the king had to celebrate them in person, and even the conduct of a military campaign could not excuse him from taking the chief part in, for instance, the festival of the Great Goddess of Arinna; the extent to which the normal functions of royalty were in Hatti overshadowed by the duties of priesthood is made clear by the fact that on Hittite monuments the king is almost without exception represented as wearing his sacerdotal garments and performing some religious rite.

The deities worshipped with so much state ceremony were at once formidable and kindly. 'Thou, Sun goddess of Arinna, thou art a benevolent goddess; man, O Sun goddess of Arinna, is dear to thee, thou dost grant him pardon; thou art the light of heaven and of earth, thou art the father and the mother of all lands.' But they were severe, visiting the sins of the father upon the children: 'If any man offend the spirit of a god, will the god for that sin punish him alone? Will he not punish that man's wife, his children and his descendants, his household, his slaves male and female, his flocks and his herds, his harvest? Will he not completely destroy him? For your own sakes therefore fear greatly the word of god.' The divine wrath is caused by man's sin; therefore man must make humble confession of his sins; 'if a slave commits a fault and he confesses his wrong-doing to his master, the master does

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to him what he will, but because he has admitted his fault to his master the spirit of his master is calmed and the master does not punish his slave'. So should the gods act towards the sinner who confesses his trespasses; the prayer of penitence, therefore, if it is to be effective, should begin with a humble confession; the king himself, speaking in the name of all his people, will say, 'Thus is it, this and that have we done'. Naturally, the suppliant will plead excuses; the offence may be of old standing, 'I was a child then and know nothing of it'; but the fact remains, there has been sin, 'our fathers have sinned', and there must be confession and due amends in order that man may be restored in the favour of the gods. In striking contrast to the religion of Mesopotamia, that of the Hurri and the Hittites had a very definite ethical content, so much so that the moral virtues were personified and deified; there was a god of sincerity, a god of righteous dealing and a god of justice. Nor was this a mere form; for such a quality as sincerity the Hittites showed a genuine regard. No Babylonian monarch would have begun his autobiography as King Idri-mi of Alalakh did, with the frank admission that he had spent the first seven years of his reign in exile, nor is there any eastern parallel to the *apologia* of Hattusilis III of Hatti; there the Great King, victor in many wars, who could conclude a treaty on equal terms with the Pharaoh of Egypt, recognizes that there have been incidents in his life which might be interpreted as showing disloyalty and ill faith, and he attempts to justify himself by giving what purports to be a simple and straightforward account of the facts; that such a man should feel justification of himself to be necessary is a striking tribute to Hittite ethics.

In his *apologia* Hattusilis describes how he received instructions from Ishtar, the goddess of Samuha, in dreams. Dreams were one of the regular channels through which man might enter into relations with the gods and, to obtain such, incubation was practised; thus, when King Mursilis wanted to learn the cause of the plague that was devastating the land he ordered all the priests to sleep in a holy place and prayed that one of the gods should manifest the truth through their dreams. Whether or not there was an answer depended, of course, on the god's goodwill; there were other channels whereby a response of some sort could always be secured, by sacrificial omens, by the flight of birds, and by the casting of lots. The first method, the examination of the liver of the sheep or other victim of sacrifice and the interpretation of the marks thereon had been learned from the Mesopotamians, as is evident from the fact that in the Hittite texts dealing with the subject the technical terms are taken over from the Akkadian; at Alalakh there was found a clay model of a liver mapped out diagrammatically to show the significance of its markings which closely resembles examples from Babylonia; a similar liver in bronze found at Piacenza in Italy witnesses to the cultural influence of the Hittites on the Etruscans. Auspication, the obtaining of omens from the flight and action of birds, was essentially a Hurro-Hittite custom. King Idri-mi in exile consulted the birds as well as the sheep's intestines before he could shape the

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policy of his return. Mursilis II had sent his general Nuanna to repel an invasion of the armies of Hajasa, and the general writes to say that his senior officers demand omens of success before risking a battle—'Will not the matter be determined by the birds and the entrails?' The king, who was far away, at Carchemish, kept there by threats of a possible Assyrian attack, answered, 'I have demanded for thee the oracles by the birds and by the entrails, and the matter has been determined for thee by the birds and by the entrails. Forward! The Storm god, my Lord, has already delivered this enemy of Hajasa into thy hands, and thou shalt smite him.'

More often these omens were consulted not to foretell the future but to determine the source from which had come any evil that afflicted the consultant, so that he might know how to deal with it. If the source were an evil spirit, then magical rites were called for; but if he was afflicted by god, then he must confess and must make atonement. The distinction may seem fine-drawn, but it is a real distinction based upon Hittite theological belief. The gods are good and therefore cannot be the source of evil; if evil shows itself, it must be due either to malicious and evil spirits or to man's offences against the gods, for such automatically involve the punishment which the justice of the gods is bound to enforce. There can be no propitiation of the evil spirits; they can and must be overcome by charms and spells. If, however, divination proves that man is ultimately to blame ('We are sinners. Mankind is evil', declares Mursilis II, and 'Mankind is evil', repeats his successor Muwattalis) then by prayer and sacrifice the gods may be persuaded to temper justice with mercy. Sacrifice was essential, because the purpose of sacrifice was not merely to give to the gods the food they needed; before sacrificing, the man must purify himself; he can lay upon the victim his own guilt and so acquit himself by its death; the blood of the victim forms a special libation poured out before the god (not smeared upon the person of the suppliant as in Phoenician ritual) and creates a bond of mystical union between god and man; and the sacrificial banquet which followed brought god and man into still closer communion.

Such a conception ruled out altogether the human sacrifices which were demanded by the religion of the Semites of Syria. It is true that this has been disputed, chiefly on the strength of one 'ritual of purification', but the text really implies nothing of the sort. The ritual states that if troops have been defeated by the enemy 'they cut in halves a man, a goat, a puppy and a little pig; they place half on this side and half on that side, and in front they make a gate of . . . wood and stretch a [?] over it, and in front of the gate they light fires on this side and on that, and the troops walk right through, and when they come to the river they sprinkle water over them'. There is no reference here to any god or to any normal ritual of sacrifice. The troops have been beaten, and the punishment for cowardice should be death or, at least, decimation; instead, one man is chosen as scapegoat for the disgraced army and is killed, as are three animals, two of which, be it noticed, are unclean and

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not fit offerings for the gods. With the halves of the victims, and with wood and fire, there is built a 'gate-way', a sort of Caudine Forks, through which the troops must march, and by that act of self-degradation, followed by purification in running water, they are purged of the stigma of defeat. This is no case of 'human sacrifice';[31] it is a ritual for restoring military discipline at a minimum cost; everything that we are told about the very human character of the Hittite gods shows that a feast on human flesh would have been most distasteful to them.

Sacrifice was the proper accompaniment of prayer, whether prayer was for forgiveness or to secure blessings; the servant must by such means win the favour of his divine masters. What the Hittite sought to obtain from the gods was their protection in general, against all the misfortunes that assail mankind, and, in particular, good health, long life, and prosperity for himself and his descendants, all material blessings. In the many prayers that have come down to us there is no mention of anything to do with life beyond the grave. In so far as the custom prevailed of placing objects with the ashes of the dead it would seem that the Hittites entertained some ideas regarding a future existence. The practice of cremation is not inconsistent with such, although it rules out the cruder tenets which informed the funerary rites of the Egyptians, and it is difficult to assume that the Hittites rejected altogether any belief in life's continuance when we see dolls and toy soldiers arranged around a child's cinerary urn. But the silence of the texts may well imply that the belief played a very small part in formal religion.

Just as the Hurri and the Hittites adopted and syncretized the gods of various lands and various tribes, so too they borrowed freely the mythological stories current amongst those with whom they came in contact. The Babylonian legends of the Creation and of the Flood were taken over and given a certain amount of local colour. In the Telepinus myth we have a nature-story which, like the Babylonian Ishtar legend and the Syrian Adonis legend, recounts the desolation that overwhelms the earth when the green growth of springtime is killed by the summer heats; it may be derived from the Mesopotamian original (in which case it has been very radically remodelled) or it may be an independent version of an almost universal allegory; in the Hittite tale Telepinus is not killed but from some personal whim chooses to disappear from earth, with the result that all life dries up and withers, and the gods themselves are hard put to it to find food. The Sun god sends an eagle to search for Telepinus in the valleys, the mountains and the depths of the sea; but the eagle fails; the Storm god himself goes in search and looks in the temple of Telepinus, but he is not there. The eagle is sent out a second time but returns, saying, 'I find him not'. Finally the mother of the gods sends out a bee, saying, 'Go, search for Telepinus; if you find him, sting him in the hands and the feet and get him to appear; take of your wax and clean his wounds, make him pure and sound, and bring him to me'. The Storm god is doubtful of success, but the mother of the gods replies, 'Leave the bee alone; she will

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go and find him', and the missing god is safely brought back. Obviously the detail of the myth is purely Anatolian. The Kumarpi myths are definitely Hurrite by origin; the myth of the serpent Illujanka, which has for its hero the Storm god of Nerik, is presumably, therefore, Anatolian.

The myths with their primitive savagery seem to have little in common with the developed religion as presented by the texts of the fourteenth and thirteenth centuries BC; they belong to an old tradition and may originally have been associated with one or other of the local cults which later were combined into a single and more or less harmonious system. But even under that system the local variants preserved something of their independent character, and an outstanding instance is that of the Storm god whose special attribute was the double axe; it was perhaps his cult that was adopted by the Cretans of Knossos, and it survived till far later times as that of Zeus Labrandeus. The influence of the Hurro-Hittites upon Greek religion is indeed remarkable. The classical Greeks themselves were aware that the cult of Dionysos came to them from Asia; now we find that the Hesiodic theogony is in part derived from Anatolian sources. Some of this borrowing may have been due to trade connections; thus, the legend of Zeus and Typhon is based upon that of Kumarpi and was probably brought to Greece by Greek merchants who lived at the trade-port at the mouth of the Orontes, under the shadow of that Mount Kasios which, according to Greek and Hurri versions alike, was the scene of the divine battle. Some stories and beliefs may have come through the 'Achaeans' of western Asia Minor. But in many cases, whatever the channel may have been, the source is beyond doubt. When we consider further the *haruspices* of Etruria and of Rome, and remember that the Flood story of the Hebrew Genesis is definitely coloured by the Hurri version (actually the longest extant account of the Gilgamesh epic is represented in the Hurri translation)[32] we shall realize that for the study of ancient religion that of the Hurri and the Hittites has a quite peculiar importance.

## SYRIA

The peoples who at the beginning of the third millennium inhabited what we may call Syria, forebears of those described in the Old Testament as Moabites, Edomites, Canaanites, Phoenicians and the rest, were all of Semitic stock and shared what were essentially the same religious beliefs;[33] but the very different conditions of life of the different peoples inevitably introduced variations in the local cults which almost obscure the underlying unity. It was not to be expected that the nomads of the eastern deserts should be moved by the same ideas as were natural for the dwellers in the fertile coastland, nor would the southern tribes have those political contacts which in the north added such a god as Hadad to the native pantheon. The Phoenicians, according to their own tradition (and it is presumably correct) were immigrants whose original home had been far to the east, somewhere on the Persian Gulf, and the faith

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that they brought with them was in all likelihood the relatively simple one which in much later times persisted in the east. It happens that we are far better documented on the subject of the Phoenician religion than on that of any of the other peoples of these regions (except the Hebrews), and we can see how profoundly their religion had been modified by environment towards the middle of the second millennium BC.

The soil of the coastal strip is naturally fertile. The high mountain range which cuts it off from the interior attracts a rainfall which can be considerable but is capricious and may sometimes fail almost entirely, and there is no water supply that could be utilized for artificial irrigation. The growing crops may be injured by the hot breath of the *khamsîn* wind blowing from the southern desert, or annihilated by that other desert plague, the swarms of locusts. The transition from the rainy season of winter to the parched and torrid summer is abrupt. The rivers are too few and too small to have much importance, but abundant springs break out all along the foot of the mountain range and even in the sea. A people so situated was bound to emphasize the cult of the agrarian gods—the gods of the soil, of water, of vegetation, those who represented the contrasting powers of summer and winter; moreover, a settled people made wealthy by trade and long accustomed to city life was bound to formalize its religious practice with an elaboration unknown to the desert dweller.

The original head of the pantheon, Elyon, 'the Most High God', from whom and his consort, the Earth goddess, were descended all the other gods, seems to have been in the course of time supplanted by his son Bel, a solar deity who is king of heaven, the author of creation and the supreme judge.[34] Ba'al, afterwards identified with Hadad, the northern god of the storm, was primarily the lord of the mountains whose home was in the Lebanon range and on Carmel; his son, Aliyan Ba'al, a god of the nether world, was lord of the springs and wells and of the mountain torrents which come from the mountains, and, because there are fresh-water springs in the sea, lord of the ocean also. The Semitic god of vegetation, the inventor of barley and of the plough, was Dagan, whose worship can be traced from Ashdod in Philistia northwards to Mari, where he was 'the King of the land', into Assyria where Shamshi-Adad I, contemporary of Hammurabi, proclaims himself as 'he who reveres the god Dagan', and southwards again into Sumer where the kings of Isin bear the names Idin-Dagan and Ishme-Dagan. The chief goddess was Astarte, whose worship was perpetuated by the Philistines; originally a goddess of procreation and fecundity, she was later confused with the goddesses Asherat and Anat, the latter being the leading character in the old myth of Ba'al and Aliyan Ba'al. The myth, which epitomizes the agrarian nature of the Syrian cults, describes the struggle between Aliyan Ba'al as lord of the springtime growth and his opposite, the god Mot, spirit of the summer harvest.

It is the war of the two seasons. High summer reigns and Aliyan Ba'al has been banished to the underworld and the temple of Ba'al exists no longer.

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Anat calls upon the help of Ba'al, and the god reconquers for her the mountain heights of Lebanon; then she conducts a mass-sacrifice of human children and with their blood rejuvenates the old god El and secures from him the rebuilding of Ba'al's temple which, at the beginning of winter, is opened with a holocaust of sheep and cattle, and Ba'al promises 'to fatten gods and men and to make to live again the multitudes of the earth'. But as the hot suns strike on the olives and the fruit trees Ba'al must yield up his throne; he descends into the underworld amid universal mourning in which even Mot joins, and Anat performs his funeral rites. She begs of Mot, now again enthroned, to restore her brother from the dead, describing the horrors of the drought due to his death—'Life abandons the sons of men'—but Mot refuses, relying on that higher dispensation which 'put into the hands of Mot, the divine Son, the lowlands that lack the rain which falls from heaven'. Since prayers are unavailing Anat has recourse to force. 'She seizes Mot, the divine Son. With a blade she cuts him, with the winnowing-fan she winnows him, with the fire she parches him, with the quernstone she grinds him'; the harvest is in, and the new year begins with the winter rains—'the heavens will rain down fatness and the rivulets will run with honey'.

The myth, recited in the mystery-plays performed in the Syrian temples, is in its essential nature-worship identical with that of Ishtar and Dumuzi (Tammuz) in Mesopotamia and that of Isis and Osiris in Egypt: indeed, according to tradition, Egypt got the story from Syria, just as Greece derived from it the legend of Adonis, 'Adoni', 'My Lord', as Ba'al Aliyan is called upon a Phoenician altar from Byblos. In religion as in other things the Phoenicians were the middlemen for international exchange, and of the many Asiatic elements in Greek mythology not a few must have been introduced by Phoenician merchants of the Early Iron Age visiting the harbours of Greece.

But while the Syrians might cast the legends of their gods in a picturesque and dramatic form which commended them to foreign hearers, there was nothing in their religion that could help to advance man's conception of the divine. The myth of Aliyan Ba'al is as savage and brutal as the natural phenomena personified in it, and the Syrian cults faithfully reflected that savagery. The Hebrew prophets who brought against them the accusation that 'they sacrificed their sons and their daughters to idols, and the land was defiled with blood' did them no injustice, for with the Phoenicians at least the custom of sacrificing the first-born persisted long after neighbouring peoples had learnt to substitute an animal for a human victim; the story of Jephtha's daughter and the child-sacrifices which were practised in the valley of Tophet outside the walls of Jerusalem show that even the regions east of the mountain range long observed the same barbarous rites. Whereas most of the peoples of the Middle East held the simple view that sacrifice was necessary because the gods, man-like, were hungry and must be fed, for the Syrian it was a magic rite; through the blood of the victim the offrant has access to his god, and therefore he anoints his hands with the blood before

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he makes his prayer. Even the animal victim is only a substitute for the offrant; by the laying-on of hands he identifies the beast with himself and by the proper ritual charges it with his own sins, making it a 'scapegoat' by whose death he is freed from all guilt before god. Undoubtedly the formal religion of the later Jews borrowed much from the old Semitic ritual, just as Christianity was to borrow from contemporary paganism; but it was the adaptation of outward forms only. So far as we can see—and the Ugarit tablets afford evidence enough—the religion of the coastal Semites was singularly lacking in moral and ethical content and contributed nothing to later human thought.

## CRETE

It has been stated above (pp. 377–8) that in the first half of the second millennium BC Cretan civilization was in many ways the finest of the old Mediterranean world, and on the strength of that it might be expected that its contribution to the history of man's religious beliefs would be proportionately great. But such is not the case. We possess many cult figures, many religious symbols and, on intaglios and seal-impressions, a vast number of illustrations of what seem to be religious characters and of unmistakable ritual; but in the absence of documentary evidence the interpretation of all this is arbitrary and subjective. Almost every scholar (and there are many such) who has written on the subject of Cretan religion has on almost every point arrived at conclusions different from those of the others. Nor is this divergence confined to details; it is fundamental. One writer declares that the religion was a dual monotheism, the Supreme Principle being personified as a woman to whom was subordinate a young male—'there is no evidence for more deities than these'; for another there was a plurality of gods and goddesses having special functions; for some, the head of the Cretan pantheon is the Great Mother, to be identified with Cybele, Isis and Astarte; for others, the ubiquitous symbol of the Double Axe bespeaks a Great God like the Hurrian Teshub, later to become Zeus Labrandeus, whose double axe, the *labrys*, accounts for the name of the Labyrinth of Knossos. The uncertainty of interpretation is increased by the fact that the evidence on which all arguments are based is mixed, some being definitely Minoan and some Mycenaean; we cannot be sure that the two peoples had the same religion, and even where there seems to be continuity there can be no assurance that the Mycenaeans, while taking over from their predecessors the forms of religion, necessarily preserved the content of those forms unchanged. In a history such as this it were best to keep, so far as possible, to the few facts about which there can be no doubt.

No excavation has yet brought to light anything that deserves the name 'temple'; it is fairly safe to say that such did not exist. Numerous sacred caves, rock shelters and hill-top shrines have been identified and examined. These were places of pilgrimage, at which offerings were made—the character of the

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offerings being noticeably different at different sites; essentially natural features, they might be distinguished by a *temenos* wall, an altar of rough masonry, and by a little building which may have been a sanctuary. With the caves we can associate a pillar cult, for in some of them, e.g. in the cave of Eileithyia at Amnisos, and in that of Psychro, there are stalagmitic pillars into the cracks in which the worshippers thrust their votive offerings; that the cult was not confined to these natural baetyls is shown by intaglios where a pillar standing in the open has a bird perched upon it to witness to the immanence of the deity.

With such rustic shrines again must one associate the tree cult. This is amply vouched for by the intaglios, which show the little *temenos* wall, the altar and (sometimes) the aedicule built against or round the tree, while the worshipper grasps one of the tree's branches and a divine figure may sit beneath the shadow of the foliage or may issue from the branches; it is the epiphany of the Tree goddess.

Within the same category of nature-deities must come the well-known figure of the Lady of Beasts. On a seal from Knossos she stands upon a mountain-top, flanked by lions, with a worshipper on one side and a shrine on the other; here she is unmistakably the goddess and the mistress of wild creatures. More often she appears heraldically set between two animals, grasping them by the head or by the foot; or she may grapple with a single beast, or walk accompanied by one, or she may be the huntress armed with spear or bow. Occasionally her place is taken by a male figure, and the latter is manifestly a god,[35] but the Lady of Beasts is far more common than the Lord of Beasts; here, as in other cases, the male deity exists indeed, but plays a subordinate part.

In the palaces and houses of the Minoan period that have been excavated it has generally been possible to recognize cult-rooms or 'chapels' or, at least, a corner or a niche of an ordinary room where an altar, with cult objects, shows that some religious ritual was practised. Such rooms are always very small, and it is not easy to reconcile them with the shrine façade represented in silhouette and repoussé work on certain gold-leaf ornaments from Mycenae; these show a building in three sections, of which the central one stands up high above the side compartments, all alike crowned by horns of consecration; in each compartment a sacred pillar stands upon horns of consecration while, over the side compartments, a bird is perched to symbolize the presence of the deity. Very similar buildings are represented on a gold-leaf plaque from Volo, and also on fragments of a miniature fresco from the Knossos palace; undoubtedly the picture is correct, but the ground-plans of the cult-rooms so far discovered do not correspond with it; it has even been suggested that what is represented is not the exterior façade of the shrine but its interior—the reredos, as it were, with horns of consecration in front of it very much as we see them in the Shrine of the Double Axes at Knossos.

On the altar-ledge of the Shrine of the Double Axes (which is of L.M. III.,

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i.e. of Mycenaean, date) there were four crude bell-shaped terra-cotta figures of goddesses or attendants and one of a male worshipper holding a bird; similar cult figures occur regularly in other house—and palace—cult-rooms, but the most famous are the late Middle Minoan III faience figures found in the Central Palace Sanctuary deposit at Knossos (Pl. 53). The distinguishing attribute of those goddesses, as of the fine chryselephantine statuettes such as those now in Boston, is the snakes which they hold in their hands or have coiled about their bodies; elsewhere, as at Gournia, the bell-shaped altar figurines are encircled by or grasp snakes, and a common feature of shrine furniture is a tube-shaped clay vessel decorated with snakes in relief; the domestic cult carried on in palace and house is the cult of a Snake goddess.

It has generally been urged that the snake is the proper attribute of a chthonic deity; therefore the Cretan goddess must be the goddess of the underworld, of the earth beneath whose surface is the realm to which the dead go down and from whose surface the plants and the crops grow up; she is worshipped in the household chapel as the protectress of the house's dead. This may be so, but another view, put forward first by Evans[36] and adopted by Nilsson, would appear preferable. In ancient and in modern folk-lore, including that of Greece, the snake is the guardian and genius of the house—an actual snake is welcomed and respected and may even be fed with milk and bread-crumbs; therefore the Snake goddess is the protectress not of the dead but of the living members of the household. Certainly this accords better with the archaeological facts; the 'snake-tube' sanctuaries go back to the L.M. I period, i.e. are definitely Minoan, and so far as is known the Minoans did not greatly concern themselves with any after-world, and it was only the Mycenaeans who lavished labour and money on great tombs and splendid offerings to the dead.

In the cult-rooms no other deity seems to have been worshipped, for the birds, to whatever species they may belong, probably do no more than symbolize the presence of the divine power. The intaglios give us an astonishing range of what may be called demonology, creatures compounded of man and beast and bird, but whether these are anything more than exercises of the craftsman's fancy it is impossible to say. There is no evidence for anything in the nature of a bull cult; the horns of consecration may well originate from the bucranium (with which they are sometimes associated) but the bucranium stands for the sacrifice, not for the god. The case for the double axe is doubtful; we may see in it the special aniconic form of the supreme deity, or we may regard it as simply the sacrificial instrument which by virtue of its function has come to be considered holy; certainly it is never seen in the hands of a male god, but only in those of women.

Our actual knowledge regarding Minoan religion is, then, limited to this, that there were, on the one hand, the rustic deities of caves and trees and hill-tops and, on the other, the domestic deities who looked after each individual house and were worshipped within its walls; there were gods as

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well as goddesses, but the latter played a far more important role. Apparently there were no proper temples, and apparently no professional priesthood, for neither the family cult nor the pilgrim's offering called for such. Animal sacrifices were offered to the rustic gods, for these are represented on the intaglios; libations were poured out of vessels of prescribed form and offerings were made of fruit and flowers; above all, the gods were honoured by dances, and we are shown the worshippers reeling in an orgiastic ritual.

Generally speaking, the scenes upon the intaglios suggest that the Minoan religion was in keeping with the character of Minoan art, picturesque, humane and cheerful. The Snake goddesses protect the house, the Lady of Beasts is man's ally, and the divinity immanent in baetyl and tree is not likely to be nocuous; the approach to the gods is by feasting and dancing, and if they show themselves in answer to the adorant's prayer their epiphany is awe-inspiring, of course, but with a joyful excitement. This is something utterly unlike the beliefs and practices of Egypt, of Mesopotamia and of Phoenicia. Whether any element of it was to survive and influence later societies, whether the 'fair dancing-place which Daedalus made for Ariadne' may have helped to mould the Dionysiac choruses of the Attic stage it would be rash to say; but at least we may grant to the Minoans a conception of the gods which was neither slavish nor savage but innocently gay.

## THE HEBREWS

The family from which the Hebrew nation claimed descent belonged to the western branch of the Semitic people, the Amorites of the Old Testament, which contrasts these inhabitants of the north-eastern steppes stretching from the Jordan rift northwards to the Anatolian foothills with the Canaanites of southern Syria. According to Hebrew tradition the proper home of the family was at Harran, but a branch of it had established itself at Ur, in which city Abraham was said to have been born.[37] Those two cities, Harran and Ur, were the capitals of the two earthly realms whereof Nannar, the Moon god, was the king, and it was inevitable that anyone living in either of the cities should acknowledge the supreme authority of the divine ruler. Whatever relics of the original Semitic religion of his house Abraham may have retained, his real religion was that of Ur, with the cult of the Moon god as its principal element. In later days the Jews were well aware that 'your fathers worshipped strange gods beyond the River' and to that tradition added the legend that Abraham's father, Terah, was by trade a maker of images; we may dismiss the legend, but the truth of the tradition is proved by the fact that the name Terah is taken from the northern (Hurrite) name of the Moon god who was worshipped as Terah in Harran and as Nannar in Ur. Hebrew religion, therefore, is rooted in that of Sumer.

Although there is no evidence sufficient to fix any precise date for Abraham (see note 37) the various chronologies that have been attempted so far agree



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that his time of residence at Ur can safely be assigned to the Larsa period, i.e. between 1920 and 1800 BC. Now, as has been explained in the section dealing with Sumerian religion (p. 713) this is exactly the period in which the cult of the family god reached its full development, when every house possessed its domestic chapel beneath whose pavement lay the graves of the family's forebears and when family worship filled the void left in man's religious consciousness by the growing exclusiveness of temple ritual and by Nannar's failure to protect his kingdom against foreign enemies. That the household of Terah followed the example of his neighbours at Ur in this respect also could be safely assumed, but no assumption is necessary; when Jacob made a covenant with his cousin Laban he invoked the sanction of just this family god, 'the God of Abraham and the God of Nahor, the God of their father'; this is no personal deity but that unnamed divine being which personifies the family throughout its successive generations and is for its members the operative power in all their family affairs.

The removal of Abraham's household from Ur to Harran had no significance so far as its religious observances were concerned. Here, too, the state worship centred upon the Moon god as Lord of the City; much, at any rate, of the popular mythology had been borrowed from Sumer; that the cult of the family god was practised here also is evidenced by the Hurrite law which laid it down that possession of the figures of the family god (the teraphim of the Book of Genesis xxxi. 19, 30) constituted a claim to primogeniture. At Harran, then, Abraham would have been completely at home; it was when he migrated thence into the relatively barbarous surroundings of Palestine[38] that the first step was taken which led to the isolation of the Hebrews as a 'peculiar people'.

Wherever he went Abraham would take with him the traditions of civilized life with which he had been imbued at Ur; on the intellectual, ethical and moral sides the change of country would mean no change of character. It is, indeed, made quite clear by the Old Testament narrative that the patriarchal family did in fact continue to observe the Sumerian social standards to which the elders were accustomed. But in the matter of religion migration into Canaan involved a complete break with the past. The supreme authority of the Moon god naturally ended at the frontiers of his kingdom, and it could be extended beyond them only by conquest; Nannar could not accompany the most devoted of his subjects into a land in which he would be at best but a stranger admitted on sufferance. But apart from this, the Moon god had to be properly housed; for his residence on earth he required a temple, the 'house of God', served by his accredited priests, and that was something that no wanderer could supply. The Moon god, therefore, had to be left behind. And the same was true of the other major gods; they had to have their temples; they were all localized deities, whether they bore rule in kingdoms of their own or, as at Ur, formed part of the court of the locally supreme god and so had their own 'houses' built for them in his territory and at his expense. Even

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those minor powers, exercising a strictly limited jurisdiction, whose little shrines we have seen wedged in between the private houses in the streets of Ur, needed a dwelling, however simple—and in any case they were far too numerous and far too seldom invoked to be exported *en masse*. The only god whom Abraham could take with him, of all those whom he had known and worshipped, was the nameless family god who *was* the family and, if the family moved, could not be left behind.

It is, of course, true that every traveller at that time was faced with the same predicament; the gods were local and could not go with him on his travels. But the normal solution was simple enough. A man passed from the territory of one god to that of another. Naturally he was bound to accept and acknowledge the established government of each land that he entered; where the government was exercised by a god he would automatically recognize that god's local supremacy, and on his return home he would resume the worship of his native deity without any consciousness of past disloyalty. This political-religious shift of allegiance would, under normal conditions, have imposed itself upon Abraham, and the story of his paying tithe to the priest-king of Salem suggests that he was prepared to practise it; but conditions were not normal. As a pastoralist accompanied by his flocks Abraham was obliged to avoid as far as possible the little Canaanite towns ringed about with their agricultural domains and to keep to the open country which was more or less no-man's-land; there the writ of the gods of the city states did not run, there were no temples of the sort to which he had been accustomed, and such crude 'high places' as he may have passed would not appeal to him as being in any sense 'houses' of gods. Admittedly it was difficult not to be affected in some degree by the opinions and beliefs of the people whom he met, and who presumably knew what was right in their part of the world; the proposal to sacrifice his first-born, Isaac, was an unwilling concession to local practice. But the town-bred family of Terah had a supreme contempt for the barbarous peoples of Canaan (Rebekah thought that life was not worth living if she had to associate with 'the daughters of the land'),[39] and the civilized traditions of Ur were strong enough to make the patriarch reject the demands of Canaanite ritual. There was no denying the existence of the great gods. The growing clan had brought with them the mythological legends which were current equally in Ur and in Harran (it was the northern version that they had made their own), and these were passed down from father to son to form the background of faith; but for practical purposes it was the family god that mattered because with him alone they could be in contact, and inevitably he tended to assume for himself the powers which really belonged to the great gods; the mediator tended to become the giver and the source of giving. The head of the clan conducted the worship of the family god—the God of Abraham, of Isaac and of Jacob—in the traditional manner, sacrificing to him not in any temple but upon a makeshift altar set up wherever the camp might be pitched, and although, by means of intermarriage with native women, 'strange gods'

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did find their way into the hands of the clansmen, yet such were regarded as unorthodox (Gen. xxxv. 2) and had to be given up; it would seem that throughout the period of the patriarchal residence in Canaan the cult of the family god remained unadulterated.

It was different in Egypt. The Hebrews were still shepherds, and were living only on the outskirts of the Nile valley, but they were associated with and subject to a people whose civilization they could not despise, governed by a king who was himself a god, and settled in the proximity of towns where magnificent temples housed the gods in whose territories they dwelt. It was a fortunate thing for them that the Egyptians, for whom shepherds were 'an abomination'—the prejudice reflects their national hatred of the Hyksos conquerors—kept the Hebrews at arm's length; but even so the process of assimilation went far, and the faith of the patriarchs was very nearly swamped by the organized religion of Egypt. Persecution emphasized their racial identity, but the peculiar beliefs and practices of their forefathers were largely forgotten.

According to Hebrew tradition, as set out in the book of Exodus, the flight of Moses, a prominent Hebrew,[40] into the land of Midian proved to be the salvation of his people. In the tent of Jethro, whose daughter he married, he could take part in the domestic ritual conducted by his father-in-law and recover the knowledge of Semitic religion which Egyptian influences had almost obliterated. In the hill pasturages of Midian he could forget the temples of the Nilotic towns and fall back upon the cult of the God of Abraham, of Isaac and Jacob. This old nameless god he now identified with the Yahweh whose worship had been widespread long since amongst the western Semites and whom he now rediscovered in the wilderness where Jethro pastured his flocks; by this identification the family god of the patriarchal clan gained in stature and, without any change of character, could be the god of what had become a considerable tribe.

Although Moses' demand to Pharaoh that he should let the Israelites go in order that they might hold a feast in the wilderness implied to Pharaoh—and probably to the Israelites—that theirs was, like others, a local deity who could be worshipped properly only in his own domains, the conception of a tribal god was manifest from the outset. When the migration from Egypt began 'Judah was His sanctuary and Israel His dominion', so that 'the sea fled' before the face of a new power and 'the mountains shook' at the coming of a god who was not their local lord. To the Israelites the idea of a god whose sphere was not a place but a society must have been difficult to grasp, even though it was visibly symbolized by the fire and cloud that accompanied their march; when they entered the district in southern Sinai where Egyptian miners had set up their temple of Hathor they reverted to the beliefs they had acquired in Egypt and fashioned the golden calf in honour of the Cow goddess who was the prescriptive mistress of the land.[41] Only after a lapse of time during which those to whom the Nilotic customs had

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become second nature had died, and a new generation had grown up in the isolation of the desert and under the instruction of Moses, could the idea of a peripatetic tribal god untrammelled by space be accepted as fundamental.

The creed that Moses taught was not, properly speaking, monotheistic, but it was uncompromisingly monolatrous. The heterogeneous crowd of refugees that came out of Egypt had somehow or other to be hammered into a national unit, failing which they would be submerged in the population of Canaan and disappear, and the birthright of the patriarchs would be lost with them. The one thing that could weld them together was the patriarchal faith, and that must be exclusive. The Israelites must acknowledge allegiance to no other god; in that they would be a peculiar people distinguished from all others; but their god must be exclusively the god of Israel, the champion of them alone and the enemy of all other peoples and all other gods. The continuity of tradition must be upheld, but at the same time a new dispensation must be recognized; the tribal god was 'the god of your fathers, the god of Abraham, of Isaac and of Jacob', but no less emphatically was he 'the god that brought you out of the land of Egypt'; that deliverance marked the beginning of a new era. What may have been the custom in patriarchal times was now formalized into an ordinance—there was to be no material representation of the god who was immanent in the tribe—'thou shalt not make to thyself any graven image . . . thou shalt not bow down to them nor serve them'; but in order that men might not forget that their god was present amongst them a special tent was prepared for him and an order of priests established for his service.

Considering how large a part the preparation for the next world played in the religion of Egypt, with which the Israelites were familiar, it is curious that the Mosaic creed has nothing whatever to say about any life after death; the incentive to virtue is 'that thy days may be long in the land which the Lord thy God giveth thee'. The whole of the moral code is based upon the divine sanction, but it does not attain any high level; its ordinances are such as would naturally be observed by the members of a nomad tribe towards one another. Murder is forbidden, but the law of the blood-feud is allowed; adultery is forbidden, but this applies only to adultery with a married woman whereby the line of descent is broken and the right of heritage endangered; theft is forbidden, but god promises to his followers all the wealth of Canaan provided that they faithfully exterminate its present owners. Granted, however, that the laws which can be attributed to Moses do not in substance rise above the level of the ethics of a primitive society, they possess one unusual quality; they are not put forward as the codification of traditional custom but claim to be the direct orders of the tribal deity. Consequently any infraction of the laws is not merely a social offence but a sin against god. The laws dealing with man's relations to god are put on the same footing as those that regulate his behaviour to his 'neighbour'; the mere form of

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the decalogue brings everyday life and religion into closer contact than had been effected by any other established creed.

The traditional forty years of wandering in the wilderness was none too long a time to inculcate the new faith in the hearts and minds of a people accustomed to the splendours of Egyptian ritual, but that faith was likely to be exposed to yet greater dangers in Palestine. The social legislation of Moses, and many of his religious ordinances, were expressly designed for a nomad tribe[42] and might well prove ill-adapted to a people settling down to a sedentary life in villages and towns. But in fact that danger was minimized by the character of the settlement in its earlier phases, and it would seem that the course followed was not fortuitous but deliberately planned to avoid the risks of too sudden social change.

It is true that the Israelites had been promised 'great and goodly cities which thou buildedst not, and houses full of all good things which thou filledst not, and wells digged which thou diggedst not, vineyards and olive trees which thou plantedst not';[43] but they were warned that that was the time when their allegiance to their god would be most imperilled. Events proved that this was indeed so. The initial victories over Sihon and Og won for the Israelites a considerable territory in Moab; they settled down in the Moabite 'cities' and promptly adopted the worship of the Moabite gods; it was because of this apostasy that when Midian in its turn was conquered Moses 'burnt all their cities wherein they dwelt, and all their goodly castles, with fire' and pitilessly slaughtered all the inhabitants except the unmarried girls.

But the main promise, constantly repeated to the tribe, was of a very different sort; they were to be brought into 'a land flowing with milk and honey'. The prospect offered to them was not of agricultural land, for which their whole experience made them unsuited, but of the rough uplands of the Judean hills, where there was all-the-year-round grazing for their sheep and goats and, thanks to the exuberant flowers of springtime, the wild bees furnished plenty of that sweetness which otherwise life lacked. It was a miserably poor land if judged by the standards of civilized man, but a veritable paradise for shepherds accustomed to the scanty pasturage of the Sinaitic desert. The prospect was quite understood, and for the bulk of the Isaaelites was the best that they could desire; only the tribes of Reuben and Gad, because they possessed numbers of cattle looted from the Midianites, demanded, and were allowed, to settle in Gilead, east of Jordan 'which is a land for cattle'; the other tribes asked nothing better than the hill pastures. This accorded well with what was clearly the deliberate policy of their leaders; for as long as possible the Israelites were to remain a pastoral community living apart from the more civilized Canaanites who might corrupt them. The capture of Jericho was essential, in that it blocked the road into the promised land, but the city was promptly laid waste and a curse invoked on anyone who should try to rebuild it; in the same way the town of Ai was burnt 'and made a heap for ever'. The towns and villages of the petty 'kings' who opposed the invaders were

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destroyed and their inhabitants exterminated, but the larger centres, with the exception of Hazor, escaped, not only because their defences were too strong for the undisciplined forces of Israel but also because they lay in the lowlands and therefore were not coveted by the shepherds. The policy is made evident by what is said concerning the Anakim; those were cut off 'from all the mountains of Judah and from all the mountains of Israel', and their settlements there 'utterly destroyed', but their main lowland cities, Gaza, Gath and Ashdod, were left in their hands unmolested. Joshua's aim was the occupation of the hill country, where his followers should remain nomad, isolated by their manner of life from the temptations of Canaanite civilization. To some extent the policy was followed, and even as late as the reign of Merneptah of Egypt (1225–1215 BC) the Pharaoh, in his song of triumph over his Syrian campaign, while he boasts of the capture of cities like Gezer and Askalon, uses of Israel an expression which does not necessarily refer even to a settled agricultural people.

The plan of isolation was not carried out systematically. Not nearly all the old inhabitants could be slain by the sword—even Jerusalem remained an enemy outpost until the days of the kingdom; many were put to tribute or admitted as allies, and, on the plea of blood-brotherhood, accepted as fellow-Israelites. Such may have been the origin of the tribes of Dan, Zebulon and Asher, seeing that in about 1430 BC, before the invasion under Joshua, King Idri-mi of Alalakh took refuge with the Habiru[44] who then occupied the territory assigned in the Old Testament to those tribes; indeed, Asher and Zebulon are mentioned by name in the legend of Kereth[45] and must therefore have been in Palestine—though not necessarily in the same area—at a still earlier date. The Book of Judges describes the constant apostasy of sections of the Israelites, generally of the more northerly tribes; it was due to their intercourse with the various races surrounding them, and in many cases may have been but a relapse from a conversion prompted more by political motives than by any rooted belief; so can we explain the final apostasy of the northern kingdom of Israel instigated by the rebel king Jeroboam. In the south country, however, the tribes of Judah and Benjamin, together with the priestly house of Levi, concentrated in the inhospitable tangle of the Judean hills, could better preserve themselves from contact with their neighbours.

It is remarkable that in spite of the important part played by the Philistines in later Hebrew history the Old Testament is completely silent about their arrival in the coastal plain; the great invasion of the Peoples of the Sea which threatened the existence of Egypt and changed the whole complexion of the Middle East seems to have passed unnoticed by the Hebrews. The invaders advanced generally along the coast and turned inland only if it were necessary to crush some city that otherwise might threaten their flank; obviously the Hebrew tribes presented no danger, and if so it was because they were still largely a pastoral people in the process of settling down to agriculture with the village as the largest unit of society. In this conservative existence, when

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even the Ark of the Covenant was kept not in a builded temple but in the tent that recalled the desert wanderings, the pure doctrine of the Mosaic teaching could be maintained intact. None the less, there was a marked development of the Mosaic conception. In Sinai the God of Abraham, of Isaac and of Jacob had become the God of Israel, and since Israel was a nomad and a landless folk his dominion had been not territorial but personal, over the tribe as an entity and over the individuals composing it. Now the Israelites possessed a land of their own, and that a considerable one, for all its poverty; in theory at least the 'Twelve Tribes' were united, and by common action they had defeated recognized kingdoms and had maintained their independence. All this was god's doing, and with the growth of his people their conception of god grew likewise; Yahweh was becoming a national god, and the spirit was astir which in due time would make Jerusalem 'the place where men ought to worship'.

## THE INDUS VALLEY

The excavation of the ruined cities of Harappā and Mohenjo-daro brought to light an ancient civilization which was at first sight as puzzling as it was unexpected; for it appeared as an isolated phenomenon having no roots that could be traced back into the past and no connection with anything that was to follow it; it seemed wholly alien to India in its character and unrelated to the development of Indian history. We can now see that in part at least its character was formed by contacts with the west (Part II, Chapter II) and we can begin to realize that it was not so sterile as its dramatic end made it appear.

It is true that the Aryan invaders completely destroyed[46] that urban civilization which was so much at variance with their own ideas of life. Indra was 'the destroyer of cities', and with the overthrow of the cities the arts and crafts which had ministered to their splendour and depended on the wealth of the citizens for patronage perished also; Aryan victory seems to have involved wholesale massacre—the bodies of women and children lie amongst the ruins of the houses—and there was no chance of any trade revival under the rule of the barbarians. In the light of history it is only natural that the material evidence which archaeology can produce implies that the entire culture came to an abrupt end; the great cities were wrecked and long remained desolated; in the course of time poor squatters camped upon the ruined sites, and the odds and ends of domestic furniture which bear witness to their presence seem to show clearly enough that the old arts of the Harappā civilization had been forgotten.

On the other hand, the mass of the Harappā populace were agriculturalists living not within the city walls but scattered over the countryside; and these people, who constituted no danger to the conquerors, but were economically indispensable, were not massacred but were enslaved. They were not skilled in the arts and crafts of the townsman, but they did share the townsman's

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religious creeds and practices, and those they would—and obviously did—preserve, perhaps the more faithfully because the only liberty left to them in their serfdom was that of belief.

Of the many buildings excavated at Mohenjo-daro and Harappā not one can be identified with any certainty as a temple or shrine. The many inscriptions found, which might well have been of great value as giving the names of gods and goddesses, are still undeciphered and therefore help us not at all. Our sources of information regarding the religious ideas of the Indus valley people are therefore limited to a few small stone figures which may represent gods; clay figurines, some of which are merely toys, some votive, but some certainly religious ikons; the very numerous seals and amulets of which again some give religious motifs or figures of deities; and, lastly, baetylic stones and phallic symbols. This material evidence, if taken by itself, would tell us little more than that there was, in the Indus valley, a religion that recognized gods in human form, venerated and possibly worshipped various animals, and made a cult of the phallus as representing the reproductive powers of nature, a religion, in short, so uniformly characteristic of any primitive agricultural society as to have no particular interest. Fortunately, however, our evidence is not altogether isolated. Because the religion of Harappā did not die out, but was handed down by successive generations of servile peasants, it is possible to link it up with the known beliefs of later ages and thereby better to estimate not only its intrinsic character but also its historical importance.

The outstanding object is a seal on which is carved the figure of a three-faced god seated on a low Indian stool with knees bent double beneath him, heel to heel, and toes turned down, his arms outstretched and his hands, with the thumbs to the front, resting on his knees, a typical attitude of *Yoga*; he is flanked by animals, an elephant and a tiger on his right, a rhinoceros and a buffalo on his left, and two deer at his feet. This Mohenjo-daro figure can be recognized at once as the prototype of the historic Śiva; Śiva is represented with three (or with four, or five) faces; he is the *Mahayogi*, the prince of *Yogis*, so that the attitude is proper to him; he is Lord of beasts; and the deer is sacred to him, and two deer, in exactly the pose that we have on the seal, are portrayed on many mediaeval images of Śiva, just as, beneath the throne of Buddha, they symbolize the deer-park at Gaya. This is the most convincing, but by no means the only, representation wherein we can recognize the god Śiva; a deity in the same *Yogi* attitude figures upon a faience seal and is accompanied by Nagas, one on either side of him, kneeling with hands uplifted in prayer; on another seal the god is again in the same posture but has only one face.

Now Śiva was not a member of the early Aryan pantheon; his introduction into it comes later, when the Aryan conquerors had settled down and by association with their subjects absorbed much of their old faith. Similarly the Nagas are still unknown in the literature of the Vedic Age but are prominent



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in the later literature from the time of the Sutras onwards. Even in modern India the worship of aniconic stones, both natural and worked, plays an important role; the phallic form, the *liṅga*, is the embodiment of Śiva, the vulva form that of his consort Mahādevi; ring-stones, having the same significance, are connected with the goddess of fertility and have many magical properties. None of these would seem to have any place in Aryan cults; all are characteristically Dravidic, but all of them are found in great numbers on the sites of the Indus valley cities. Of the terra-cottas, the hand-modelled female figure with high head-dress, usually nude except for belt and elaborate necklace but sometimes wearing a short kilt, is surely a deity and can safely be identified as the Earth goddess or Mother goddess; another, or perhaps the same, divinity, is represented on seals as in, or issuing from, a *pipal* tree, with a worshipper kneeling before her and seven ministrants or votaries below, an epiphany of a tree spirit like the *Yakshī* of the Bhārhut and Sānchī sculptures; incidentally one may notice that the sanctity of the *pipal* tree does not begin with the Bhodi tree of Gaya; rather because it was and had always been sacred was it chosen for the scene of the Buddha's illumination. Where animals are represented, as they constantly are, it is generally difficult to say whether they are objects of worship at all—they may be symbols or vehicles of an anthropomorphic god, and they may be sacrificial victims; the fact that they are often shown feeding out of a special vessel or associated with such things as lamps, which presumably are cult objects, gives them a ritual significance but does not necessarily mean that they are gods. On the other hand, when the bull (the commonest animal on the seals) is represented as wearing a wreath of flowers, the parallel afforded by modern Indian custom cannot be a mere coincidence.

Without going farther into the details of the archaeological evidence—and much more could be cited—we can safely assert that the religion of classical India is a combination of two very different creeds, that of the Aryan invaders being superimposed on that of the conquered race. An enslaved people is always apt to cling tenaciously to its faith, for the simple reason that belief is the only liberty left to it. The Aryans formed at best a minority, and the disproportion would become more marked as fresh conquests spread their dominion eastwards and southwards. The result was that in time the indigenous faith assumed the leading role; as Sir Mortimer Wheeler has put it, Indra had won the battle, but Śiva won the war. But the continuity which we must recognize as a historic fact further implies that the religion of the Indus valley before the Aryan invasion was the religion of Dravidic India, not the special creation of the Harappā culture. It is true that the nude female figurines which represent the Mother goddess are akin to those found in countries to the west, in Elam, Mesopotamia, Syria and Egypt, and that both in their character and in their technique (e.g. the pellet eyeballs inserted in hollow sockets) they bear a remarkable resemblance to the terra-cottas of Sumer; and since the dominant class in the Harappā state was composed of

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people who had come into the Indus valley from the west (Part II, Chapter I) it might be thought that the figurines belong to a non-Indian cult which those people brought with them from their original home. But an art form can be adapted to an existing tradition without altering its content, and a native idea can be expressed in a foreign technique and still remain fundamentally native; granted that the Harappā figurine-makers were influenced by western models, yet the Mother goddess certainly belongs to the Indian pantheon—in no country is her worship so deep-rooted and ubiquitous as in India. A single representation of a double-headed Janus-like figure has been compared with a Sumerian stone carving of the Gudea period; the figure of the Sumerian demigod Gilgamesh has been more plausibly identified on four or five Mohenjo-daro seals; the dove as a sacred symbol is common at Mohenjo-daro and appears in Mesopotamia also; but none of these gives proof that there was a mixture of western and Indian elements in the Harappā religion. It is, of course, certain that over a long period there were close commercial relations between the Indus and the Euphrates valleys; during the earlier part of that period the Gilgamesh motif was one of the most popular subjects for Sumerian seals, and if it reappears on an Indian seal it can have been borrowed for its decorative value just as well as for its religious significance; in Mesopotamia we find seals with Indian designs which were unquestionably cut by Sumerian craftsmen—they are Mesopotamian cylinders instead of being Indian stamp-seals—and the Indian gem-cutters may in the same way have adopted Sumerian designs. On the evidence that we possess it is safest to assume that the people of Harappā and Mohenjo-daro, while enjoying a material civilization which was peculiar to the Indus valley and its immediate neighbourhood, shared the religion of the Dravidic population of India generally. That assumption justifies our interpretation of the Harappā monuments in the light of later Hinduism; it also makes the ultimate victory of Śiva over Indra far more easy to explain than would have been the case had the non-Aryan elements in Hinduism to be attributed to the religion of the Indus valley alone. None the less it is to the Indus valley that the credit should be given for the survival of the religion. The high civilization of the Harappā people could not fail to influence not necessarily the content but the artistic expression of the common faith, producing something unattainable by the other Dravidic peoples, whose culture, as illustrated by archaeological discoveries, was of a relatively very low order. This is obviously true of the Mother goddess figurines with their western technique, and in the same way it needed the refined skill of the Mohenjo-daro gem-cutters to render in glyptic form the attributes and character of Śiva. While their more barbarous kinsmen were perforce content with the *liṅga* and the baetylic stone, the artists of Harappā could translate ideas into visual shapes which would survive the political annihilation of the Harappā state. If by the analogies of later iconography we are able to trace back some of the religious conceptions of Hinduism to the dark ages of the Early Bronze period it is because the art

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of the Indus valley had represented in inevitable forms the vague persons of the Dravidic gods.

## CHINA

In the religions of latter-day China a very prominent part is played by ancestor-worship. Since ancestor-worship is wholly alien to Buddhism in its pure form as taught by Buddha, and since it is not included in the teaching (which is more philosophical than religious) of Lao Tzŭ, the founder of Taoism, its origin has to be sought elsewhere, and recent discoveries have proved that it is far older than any one of the systems which have been engrafted on it and must be accounted as a survival from the earliest days of Chinese civilization.

The literary evidence available for the Shang period consists in the inscribed oracle-bones found in the Anyang district, and to this must be added the archaeological evidence provided by the tombs. Since the oracle-bones refer almost if not quite exclusively to the king and his family they deal only with the ancestor-worship practised by the royal house, and that may have been peculiar; but since the ritual of burial proves to be essentially the same for all classes—the difference being one of degree only, corresponding to the varying importance of the individual dead—one may take it that ancestor-worship was the common practice of Chinese society as a whole. The ritual was not simply a matter of pious sentiment, though affection might be an extra motive for the recently bereaved; when a king names over forty dead kinsmen, covering twenty-six generations, his offerings do not express a personal affection for each and all; they betoken a religious belief which, if we may judge from the number of inscriptions which refer respectively to ancestors and to gods in general, was in the Shang creed more practically important than belief in the gods.

According to that belief a man's real power began when he died. Death transformed the mortal man into a spirit, possessed of undefined but vast powers where his descendants were concerned. While not quite omniscient or omnipotent the spirits could grant, or withhold, success in hunting, in agriculture, in war or in anything else, and they could punish those who failed to please them with famine, defeat, sickness or death; so awful were they that it was dangerous even to pronounce the personal names they had borne in life, and they were best designated by their relationship and the day on which they were born or died, as 'Grandfather Tuesday', 'Elder brother Saturday', and so on.

To the dead, then, offerings had to be made, both at the time of burial and afterwards, so long as the family remained. The dead man, wrapped, apparently, in matting, was laid in the grave with such furniture as his relatives could afford—in the case of the very poor a few pottery vessels and perhaps a bronze dagger-axe, while an official of high rank might have a profusion of beautifully cast decorated bronze vessels. These were genuine objects, not

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the crude copies which in later times were specially manufactured for burial purposes, nor like the flimsy paper imitations of still more recent days; the Shang people seem not to have evolved the idea that spirits can be satisfied as much by the 'ghosts' of things as by the things themselves; for them the spirits were real and the offerings made to them must be real also. In the case of the kings realism was carried to the farthest extent. A pit was dug which might be 60 feet square and over 40 feet deep, with on each side a sloped passage or stairway leading down from ground-level. In the pit, and covering the greater part of its area, there was constructed a tomb-chamber of wood finely carved or adorned with designs in polychrome lacquer; in this was laid the body of the king, and in and around it an astonishing wealth of objects, including such things as chariots with their horses, and the bodies of attendants, women wearing elaborate head-dresses of turquoise or soldiers with copper helmets; then the pit was filled with earth pounded into a solid mass as was done for house foundations, and in the filling more human victims were buried, so that the total number might run into two or three hundred.

After this elaborate ritual of burial, which bears in details a remarkable resemblance to the Sumerian ritual of the Early Dynastic period and may, like the use of metal, be due to western influences,[47] there was still need for the regularly recurrent sacrifices which furnished nourishment for the spirits and won their favourable response to prayer. The spirits of the ancestors dwelt with and were under the rule of Ti, the great god, and they acted as mediators and intercessors between him and their human descendants; prayers to the ancestors take the form of imploring them to ask god to do this or that. This mediation would be forthcoming only if the spirits were satisfied by the proper offerings. The character of these can be gathered from bone inscriptions. Drink offerings of spirituous liquor seem to have been the only product of the soil that was presented to the dead, or to the gods; of such things as bread or fruit there is no mention—in fact, according to a story of the Chou period, when a high official directed in his will that during the first year after his death his favourite delicacy, water-chestnuts, should be sacrificed to him, his strait-laced son decided that filial duty must give way to orthodox tradition and refused to carry out so irregular an order. The normal sacrifices were of men and animals—cattle, sheep, pigs, dogs, and occasionally horses and birds. The total number of victims sacrificed at a time was usually small, from one to ten; but for an important ceremony might be very large—'one hundred cups of liquor, one hundred sheep and three hundred cattle'; and in several inscriptions a hundred and even three hundred human victims are mentioned. The human victims of a tomb sacrifice performed after the actual burial, either as the last act of the ceremony or at a later date, were decapitated and buried in pits, ten to a pit, sometimes with their hands tied behind their backs, furnished each with a uniform outfit of small bronze knives, axe-heads and grinding-stones, and their skulls were buried separately, in small square pits close by. With reference to these victims the bone inscriptions use

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different words: sometimes 'men', sometimes 'captives', but most often, and always where large numbers are concerned, 'Ch'iang' which, as written, combines the signs for 'men' and 'sheep' and is said to mean 'barbarian shepherds of the West'. Clearly then the sacrificial victims were not Shang but 'foreigners' and prisoners-of-war; and since on the oracle-bones the question repeatedly asked is 'Shall we be successful in capturing Ch'iang?' it would appear that military expeditions were sent out for the express purpose of collecting offerings for the altars of gods and ancestors. Isolated cases of human sacrifice, usually performed in connection with the death of an emperor or after a military campaign, occur not infrequently down to the sixth century BC, after which time the practice gradually died out as being contrary to the teaching of Confucius. But in the Shang period it was an essential part of Chinese religious ritual.

All sacrifices other than those in the tombs of the kings were celebrated in temples, in 'the House of the Spirits'. About the ritual very little is known. The liquor was poured out on the ground as a libation; animals, or special parts of the animals, were generally burnt by fire, but sometimes buried in the earth or thrown into water; the last two methods were employed for offerings to human ancestors, while the burnt offerings, according to the oracle-bones, were destined for the gods; but how far this distinction really held good it is impossible to say, and it may even be that for the Shang people the distinction was too vague to be consistently observed.

In the bone inscriptions two signs are used for 'spirits'; the first is taken from the human figure and should therefore apply only to ancestors; it might be translated 'ghosts'. The second sign, , may represent 'the spiritual forces streaming down from the heavens to men below'; one would therefore expect it to apply only to the gods, but in fact its reference is not always unambiguous, e.g. it forms part of the sign for 'temple', , 'House of Spirits', but the temple is associated with ancestor-worship as much as with the cult of the gods. But there were gods. Some of these were powers of nature or natural features; one oracle-bone records 'a burnt offering of four cattle to the sources of the Haan river', the river on which the city Shang stood, perhaps an offering made because of a drought such as that of *c.* 1190 BC when the river ceased to flow. The earth was a deity which later, and probably in Shang times also, was symbolized by an earthen mound ('the Earth of the region') piled up in the centre of each village; possibly this is the 'Queen Earth' of after ages. Mention is made of the 'Dragon Woman' and of the 'Eastern Mother' and the 'Western Mother' and of the 'Ruler of the [Four?] Quarters'; sacrifices are offered to the east, west and south, and to the wind, the 'King Wind' and 'the Wind, the Envoy of Ti'. Ti, or Shang Ti, 'the Ruler Above' seems to have been the chief god. He was specially concerned with war, and the king of Shang would not open a campaign without consulting Ti; he was asked

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about the prospects of the year's crops, he was one of the powers who could assure sufficient rain, and generally he could allot good or bad fortune to men. War was, perhaps, his peculiar province, but his other attributes were shared by the other gods and by the ancestors; at best he ranked as *primus inter pares*. It has, indeed, been suggested that he was himself but a deified ancestor, the progenitor of all the Shang kings, or that he embodies all the royal ancestry; that is possible, but the argument adduced in support of the theory, namely the fact that certain of the Shang kings bear such names as Ti I and Ti Hsin, could just as well be urged against it, seeing that theophoric names, i.e. names compounded with the name of a god, of the sort common in Sumer and in other lands of the ancient Middle East, imply the recognition of an already existing deity. Another explanation of Ti, perhaps more plausible, is based on the fact that in Shang Dynasty Chinese the word *Ti* is almost (and sometimes absolutely) identical with another word *liao* which means 'to present a burnt offering'; on the oracle-bones, in a sentence such as 'present as a burnt offering five bulls to Ti', the words *liao* and *Ti* are written identically. The theory, therefore, is that Ti was originally the ritual of sacrificing to the ancestors or to other gods and that men gradually confused the sacrifice with the deity sacrificed to, and so came to think of it as itself a separate god, just as in India the Aryans who poured clarified butter into the sacrificial fire known as Ani (this being the means for obtaining favours from the gods), attributed such potency to the means that in due time they deified it and Agni became a High God. Both theories may contain an element of truth; but no one logical explanation is likely to be exclusively true; the religious conceptions of the primitive Chinese were so vague, not to say muddled, that any attempt to rationalize them runs the risk of misrepresentation. The Shang people were thoroughly convinced of the survival of their human ancestors and of their supernatural powers; in addition they might imagine a deity behind any natural phenomenon, but such a deity seems to have been strangely impersonal; the nature of their religion did not call for any closer definition or differentiation of the gods.

Both the gods and the ancestors existed; they had knowledge and they had power, power for good and for evil. The purpose of religion was therefore twofold: to secure by offerings the favour of the gods, so that they might grant to the suppliant not evil but good, and to wrest from the gods the knowledge that would guide his actions in this world. The sacrifices have been described; the knowledge was to be gained by divination.

One method of divination was, probably, by mediums, in Shang as in later days, but naturally no material evidence for that remains. The other method, for which we have evidence in plenty, was the interpretation of the cracks produced by heat in tortoise-shell or in bone. Of the two materials the former seems to have been the original and the most efficacious, for there are frequent references to consulting 'the tortoise', or 'the Great Tortoise', whereas bone is never mentioned as such. When, in 1395 BC, P'an Keng shifted his capital

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to Anyang he reminded his discontented subjects, 'You did not presumptiously oppose the decision of the Tortoise'.

Archaeology shows that this was a method inherited by the Shang people from the Neolithic 'black pottery' peoples of north-eastern China; in the Shang practice (which was in the hands of a small college of diviners, though the king himself might conduct his own divining) the scapulae and leg bones of oxen—probably the victims of sacrifice—and the shells of tortoises, which certainly had been sacrificed, were trimmed and polished, and then oblong pits about three-quarters of an inch long were sunk in them, each pit serving for one consultation, the number of pits being determined by the area, so that a large tortoise-shell might have upwards of seventy pits. The enquirer put his question, and the diviner then applied heat, probably by pressing a red-hot bronze point against one side of the pits; the heat caused two cracks, one intersecting the pit, the other running through the point of application, and it was from the angle taken by the second crack that the answer of the spirit was made known. The answer could only take two forms, 'yes' and 'no', or 'fortunate' and 'unfortunate'; the question therefore had to be put in a form admitting of so simple an answer and, if the problem was at all complicated, a whole series of questions might be required so that the final reply was obtained by a process of elimination. Fortunately for the modern student, in about 10 per cent of the consultations the question and the answer were engraved upon the bone or shell; why this was done in some cases and not in others it is impossible to say, but the inscriptions that do appear are the source of nearly all our knowledge about the Shang period.

The questions are severely practical. Some deal with sacrifice, to whom it should be made—it was, of course, essential to find out which deity had to be propitiated—and when, and with what kind of offerings. A very common subject is war; the king enquires of the oracle when to declare war, how many men to engage, whether to attack or remain on the defensive, and what prospects were there of booty and prisoners? The crops—the outlook for each kind of grain and for the output of liquor; the weather, not only the general forecast but the immediate—'Will it rain tonight?' (and in a few cases we are given not only the official answer 'No' but the comment 'It really didn't rain!'); illness—will the patient recover?; dreams—does such and such a dream portend good or evil?; and the astrologer's usual gambit, 'Will next week be lucky or unlucky?'; and finally, and very often, 'Will the Powers help?' 'Shall I receive aid?' 'Will the spirit of Grandfather aid the king?' Such is the information that man in ancient China desired to obtain from the spirit world, and to obtain it was the whole purpose of religion.

This primitive and materialistic creed is important not for its content but for the enduring influence it has exerted upon China. Because ancestor-worship, looking ever to the past, is above all things conservative, it has helped to secure for Chinese civilization a continuity such as no other people have enjoyed, a stability proof against military defeats and political upheavals

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which otherwise would have broken the thread of tradition and obliterated the country's past. It may at first appear strange that the world's longest-lived culture, one distinguished from the outset by intellectual ability and extreme refinement of art, should for more than three thousand years cling to a religion so barbarous as that suggested by the Shang documents. The Shang creed was indeed purely materialistic in its aims and it had nothing whatsoever to do with morals or ethics; its spirits were neither good nor evil, and of its followers it required nothing but the sacrifices whereby the spirits were placated. What must be noted is that China never produced any substitute for it; Lao Tz'ŭ and Confucius alike taught not a religion but a philosophy; they supplied what had been wanting in the national religion, i.e. a system of ethics,[48] and thereby so reinforced its hold upon the national conscience that when the foreign religion of Buddhism was introduced in the early years of the Christian era, its adoption did not involve the jettisoning of the spiritual side of the old faith. For crude as that old faith was in its outlook and barbarous in its ritual, ancestor-worship as such has its spiritual side and makes a peculiarly human appeal; with its bloody sacrifices reduced to a more or less poetic symbolism and its ignorant magic either dropped or relegated to a secondary place, the simple Shang belief that men lived after death and became sources of guidance and protection for their descendants and proper objects of worship satisfied a natural craving in man and did more than anything else to form the ideals of Chinese civilization.

## NOTES TO CHAPTER VIII

1. This name of the Earth goddess, which we find in the time of the First Dynasty of Ur, seems not to have been used in the Jamdat Nasr period; it certainly does not occur on the numerous tablets of that date found at Ur.
2. According to Professor I. M. Diakonoff there were fields belonging to individual patriarchal families. These fields could be bought and sold. Sometimes the ruler bought them. Some fields, therefore, were not the property of the theocratic state.
3. The absolute autonomy of Sumerian cities in religious affairs was in fact perhaps not quite so absolute; see M. Lambert 'Polythéisme et monolâtrie des cités sumériennes', in *Revue de l'Histoire des Religions*, 157 (1960), pp. 1-20.
4. *SAKI*, p. 37, No. 1–7.
5. Professor I. M. Diakonoff points out that a city state was governed by a ruler together with a Council of Elders and an Assembly, while the kings of Ur were autocrats.
6. J. B. Pritchard, 'The Death of Gilgamesh', *Ancient Near Eastern Texts Relating to the Old Testament* (Princeton, 1950; 2nd ed., 1955), p. 51.
7. E.g. the Sargonid cemetery at Ur; one might compare with the mediaeval cemetery inside the Bab en-Nasr at Aleppo.
8. This is the accepted view, but the texts quoted in its support do not always bear the desired meaning. Thus when Urukagina lays the blame for the sacking of Lagash on Lugalzaggisi 'and on his goddess Nidaba', the translation 'his personal goddess' begs the question. In this, as in other cases, the expression 'his god' or 'the god of my father' would apply just as well to the family god as to any personal god.

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9. In the opinion of Professor J. Leclant, stress should be laid on the local aspect of Egyptian religion. The very numerous local gods all along the Nile valley were, of course, manifestations of the same universal divine force. These gods preserved their geographical personality; they were attached to the localities of which they were the respective 'lords'. They were the 'gods of the cities', worshipped and solicited by the populace; the temple inhabited by the city god is sacred soil, where the local demiurge is believed to have inaugurated creation. Thus at Hermopolis, whatever great dynastic god may have been dominant at one time or another, it is always to Thoth that texts make constant reference.

10. See *supra*, p. 409, n. 18.

11. The categorical form of this and the following sentences may be challenged by some authorities. Professor John A. Wilson objects as follows: 'the term "totemism" has two levels of applicability; first, the totem is emblematic of the group; secondly, the group is descended from or related by blood to the totem; Egyptian totemism is only of the first level. A bull was the totem of Hermonthis, and a single, specially marked bull was maintained by the community as the seat and sign of this divinity of the group. Other bulls in that community had no essential sanctity, before the confusion of Graeco-Roman times. In other words, there was no blood-relationship of the people of Hermonthis to bull as bull. There is no evidence that the native of Hermopolis, city of the ibis god Thoth, believed that he was descended from an ibis. Men were not in the lineage of Atum and the later gods.'

    As against this view Sir Leonard Woolley asks how the totem animal came to be identified with a god, or to be emblematic of the group. Also it must be pointed out that Pharaoh, at any rate, called himself Horus, the falcon. The generally accepted view credits the Egyptian with a fine-drawn and logical definition of his religious beliefs which is entirely lacking in his mythology as a whole.

12. In the prehistoric cemetery at Badari there were found graves of cows, dogs (or jackals), sheep and goats. E. J. Baumgartel comments as follows: 'thus animal worship in Egypt goes back as far as the Badarian age, never to die out as long as Egyptian religion was practised'; but the burial of animals does not prove the worship of them. The fact that the animal graves occur in the cemetery merely implies that these were funerary sacrifices for the benefit of the human dead.

13. Scenes of this kind are sometimes found on cylinder seals; see G. Godron, 'Notes d'épigraphie thinite', *Annales du Service des Antiquités de l'Egypte*, Vol. 54 (1957), pp. 191–206.

14. It may perhaps prove necessary to qualify slightly the author's conviction that the Egyptians were unable to conceive of any existence other than the physical.

15. The absence of any general study of the psychology of the Ancient Egyptians is greatly to be regretted.

16. Professor J. Leclant draws attention to the fact that the reliefs are also for the living. The splendour shown is also meant to invite the visitors to accord consideration to the dead man, to make a rich offering or, better still, pronounce the funerary formula in favour of the dead man.

17. Yet the dead man does not remain entirely outside the scene represented: he is shown walking among the figures portrayed on the walls of the tomb, thus taking some part in their activity.

18. Professor J. Leclant emphasizes the fact that certain individual prayers, on the contrary, were addressed to the sun: they were the solar hymns sung by those who had themselves portrayed in the act of offering a stele to the glory of the Sun god.

19. Professor J. Leclant emphasizes the importance of not losing sight of the Bull (or Falcon) god Mentu, whose name was honoured in those of the Eleventh Dynasty (Mentuhotep). It is, moreover, important to specify that Amon, about whose true nature (in spite of K. Sethe's essay *Amon und die Acht Urgötter*) we are still very ill-informed, was assimilated to Rê, the Sun god, forming the composite god Amon-Rê.

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20. Sir Leonard Woolley was doubtless thinking of Mry-Ptah. It is, however, considered that this 'chief treasurer' (or rather 'director of the treasury') was merely a homonym of the contemporary high priest [see A. Varille, *Annales du Service des Antiquités de l'Egypte*, Vol. 40 (1940), p. 647; W. Helck, *Zur Verwaltung des Mittleren und Neuen Reichs* (1958), p. 405].

21. The elements of the mounting attention given to Aton are already discernible in the time of the predecessors of Amenhotep III.

22. It should not be forgotten, however, that a great temple of Aton had been constructed at Karnak itself at the beginning of the reign. The excavations of H. Chevrier have brought to light the colossal Osiric statues of the king in the eastern sector of Karnak. Innumerable small blocks of sandstone ('Talatates') coming from this sanctuary have been discovered in re-use particularly as filling for the foundations of the Hypostyle Hall or, again, as filling for the second and ninth pylons of the Great Temple of Karnak itself.

23. It is, however, essential to the study of the religious psychology of Ancient Egypt to note that the Amarnian revolution, though the best known, was not the only religious revolution of Ancient Egypt.

24. From a certain viewpoint, monotheism may be regarded as basic to the religious conception of the Ancient Egyptians, as is contended by H. Junker and E. Drioton in their well-known works on this subject.

25. Professor I. M. Diakonoff considers that it was very profitable for the priests of Amon and for the governing classes to picture Amon as the god of the poor.

    Sir Leonard Woolley, however, maintains that profit was not the motive; this picture of Amon does not originate with the official priesthood. Exploration of the social background of evidence should never be neglected. The most personal prayers come, of course, from the necropolis quarry workers living in the workers' village of Deir-el-Medineh.

26. Professor J. Leclant observes that the tradition of the Wisdoms is continuous throughout Egyptian literature, remaining always the basis of education.

27. E. A. Speiser, 'The Hurrian Participation in the Civilizations of Mesopotamia, Syria and Palestine', *Journal of World History*, I, 2 (October, 1953), p. 312.

28. No doubt the present exposition could be completed by the recent research on this subject. An Anatolian (partly Hittite) and a Hurrian (northern Mesopotamia, Syria) pantheon prior to the famous Mitannian symbiosis (2000–1700 BC) are now clear. The intrusion of the Hurrians into the Anatolian pantheon did not take place until after the Hittite expeditions into Syria (1600–1500 BC).

29. Many scholars think that the Mithras of Hellenistic and Roman times was almost certainly a newcomer from Iran in Achaemenian times, not the descendant of the Mitannians. The date of the Mithraeum of Alalakh is also open to discussion.

30. Professor E. Laroche observes that several texts explicitly state that the Hittite king was the delegate of the gods, charged with the administration of the countries belonging to these gods; see H. G. Güterbock, in 'Authority and Law in the Ancient Near East', American Oriental Society, *Journal*, Supplement 17 (1954).

31. Professor I. M. Diakonoff points to the existence of a Hurrite (or Hittite?) seal depicting a human sacrifice. In his view, the Hurrians and the Hittites were no more humane than their neighbours.

32. In the opinion of Professor E. Laroche, the small remaining fragment of the Hurrian version of the Gilgamesh is practically unintelligible. There exists, on the other hand, a Hittite version of the Gilgamesh of which Otten, in particular, has made a study.

33. Dr D. C. Baramki observes that the Moabites, Edomites and Arameans make their appearance as settled folk only after the Amarna Age, and after the onslaught of the Habiru and Sa Gaz. The evidence seems to indicate that these peoples did not settle in Syria until the Iron Age. They seem to be partially descended from the Habiru; Canaanites and Amurru were already settled in the Near East at that time. They had come as a single wave in the twenty-second century BC. There were already Semites in the area who had come at the beginning of the third millennium BC. The Phoenicians

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referred to here were, of course, slightly different from the later folk of the twelfth century BC.

34. Professor A. Caquot points out that Philon of Byblos provides the only evidence that Elyon's consort was an Earth goddess. Bêl (one of Marduk's titles) plays no role among the western Semites at this time and figures as a 'Sun god' only in Hellenistic times.

35. On a seal from Kydonia he stands between the horns of consecration.

36. *Palace of Minos*, IV, pp. 152 sq.

37. Sir Leonard Woolley wrote the following note: 'My treatment here of Abraham has been most strongly opposed by my Russian critics, who say that I make "no difference between history and myth; the latter is presented as history"; they allow that, thinking that Abraham was historical, I have a right to my own opinion, but think that I should not disregard other well-founded opinions on the subject, and urge that all Soviet scholars will insist on such opinions being brought to the notice of the reader.

'I was, of course, aware that Abraham has been dismissed as a myth. The theory was propounded by German scholars of the nineteenth century; they were admirable textual critics, but they had (and could have) no archaeological knowledge, and they were bad historians. Today their extreme views are rejected by most scholars, who are ready to place more reliance upon ancient tradition as distinguished from myth; if they are approved by all Soviet scholars it is because they agree with Marxist principles, which were formulated when the "Higher Criticism" still held the field.

'I do not hold that the Hebrew tradition is impeccable, but am convinced that it has a historical basis. Abraham I believe to be a conflation of at least two (and probably three) historical individuals; allowing for that (quite understandable) confusion, the incidents related are likely to be correct on the whole—some of them, indeed, reflect contemporary conditions so accurately that they could not have been invented at a later date when those conditions no longer existed. I have put forward at length the evidence on which my conclusions are based in my book *Abraham* (London, 1936); in this History detailed argument would be out of place, and I have simply assumed the historical basis of tradition.'

For the past two decades the Bible has been shown to be a *useful* guide to archaeological research though not to be a *reliable* one. Some critics of Sir Leonard Woolley's book, *Abraham*, consider that it remains uncertain whether Abraham resided in Ur or another city of the same name. The similarity of Abraham's father's name, Terah, to the name of the Moon god might be a coincidence, the critics say. On the other hand, unhewn altar stones like those used by the Jews but not used in the Sumerian tradition have been found at Ur. Sir Leonard Woolley has dated Abraham at *c.* 1920–1800 BC by reference to the Old Testament record and has supported this by identifying the word 'Habiru', in use at the time, as a reference to the Hebrews. He concluded that the god whom Abraham took with him was an unnamed family deity and that his god became the Hebrew Yahweh. At present this construction remains a hypothesis not accepted by all scholars. See W. F. Albright, *From the Stone Age to Christianity* (Baltimore, 1940), pp. 179–82; S. W. Baron, *A Social and Religious History of the Jews, I, Ancient Times* (2nd ed., New York, 1952), p. 34. In order to obtain a clearer idea of the real position concerning Abraham, attention should be given to the nomad life of the period; see J. R. Kupper, *Les nomades en Mésopotamie au temps des rois de Mari* (Paris, 1957), and J. Bottéro, 'Le problème des Habiru à la 4ème Rencontre Assyriologique Internationale', Société Asiatique, *Cahiers*, XII (Paris, 1954).

38. Dr D. C. Baramki considers that the excavations at Ras Shamra, Byblos, Megiddo, Beisan and Gezer show that these cities were at this time well fortified with strong walls. During this period civilization reached heights not again achieved by this area until the Hellenistic Age. Abraham seems, according to the Bible, to have been a roving nomad. The peculiarity of the followers of Abraham is therefore much better explained as a contrast between the nomadic barbarism of Abraham and his followers, who may have been the 'Terahites' of the Ras Shamra tablets, and the settled and more civilized city communities of Canaan.

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39. Genesis xxvii. 46.

40. Sir Leonard Woolley wrote the following note in response to objections formulated by Russian scholars: 'Prof. I. M. Diakonoff has challenged my treatment of Moses as a historical character in the same way as he has challenged that of Abraham. Again, I believe that there is a basis of truth in the tradition, though imagination has been more active in colouring the various incidents or, in some cases perhaps, in inventing them. It would be impossible to discuss the origins of the Hebrew religion without mentioning Moses; the part played by the Mosaic tradition is too important to be omitted. If, as Professor Diakonoff maintains, Moses was a figment of the Hebrew imagination, his creation was an astonishing feat, for his "history" symbolizes to perfection the gradual change in Hebrew religion, and that implicitly, as if his creators were unaware of what they were doing. Actually in my account of the religion I have treated Moses as a symbol without insisting on his historical character as an individual, citing those incidents which, perhaps in a poetic form, throw light upon religious ideas. I should have thought it obvious that when I quoted from a psalm "the sea saw that and fled", I was not relating a historical fact, or when I said that the presence of the tribal deity was "symbolized by the fire and cloud that accompanied their march", I was not accepting a miracle without comment. I believe that to most readers "this uncritical and quite unhistorical narrative" will present no difficulty.'

41. Professor I. M. Diakonoff contends that the golden calf was an image of a male animal; it is therefore doubtful that it could be made in honour of the goddess Hathor.

    Sir Leonard Woolley thinks that the fact that the editor of Exodus used a masculine word is probably due to a mistake in the 600-year-old oral tradition; in his view, a male calf would be difficult to explain.

42. According to a scholar on behalf of the National Commission of Israel, 'the sabbatical year' seems to show that Mosaic legislation was not entirely designed for a nomad tribe. Sir Leonard Woolley, however, considers that the sabbatical year is a late institution.

43. According to a scholar on behalf of the National Commission of Israel these promises are enumerated in Deuteronomy and can hardly be used as illustrative of the Bronze Age religion of Israel.

44. Sidney Smith, *The Statue of Idri-mi* (London, 1949).

45. This is one of the Phoenician legends recorded on tablets found at Ugarit. It must, however, be remembered that the original interpretation proposed for these texts no longer meets with complete acceptance.

46. See discussion, p. 412, note 38.

47. Professor I. M. Diakonoff suggests that the burial ritual described here can be found where every human society has reached a certain stage of development. There is, therefore, no reason to think that it was borrowed from the Sumerians who lived some 1,500 years earlier and thousands of miles away.

48. Professor Shigeki Kaizuka *et al.* point out that sections of the Book of History, *Shu Ching*, dating from the early Chou era show that the concept of Heaven was given a definite moral interpretation—Heaven aids the good ruler and punishes the bad. At least among the ruling class religious ideas and moral concepts had become fused long before the time of Confucius or Lao Tz'ŭ. Confucius seems to have been anxious to preserve these earlier moral concepts which, in the social and political upheaval of his own time, were being spurned. In attempting to do so he modified and broadened them, of course.

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CHAPTER IX

# THE FINE AND APPLIED ARTS

## THE FINE ARTS

THE distinction between the fine and the applied arts is largely artificial. Although sculpture and painting may serve no more than purely aesthetic ends and be judged as works of art wholly on their own merits, yet both sculpture and painting are equally liable to be called in for the decoration of useful objects, so much so that between them they cover the entire field of applied art, where judgement must needs be based on functional criteria in the first place, with aesthetic values relegated to the second. The line is indeed difficult to draw. The applied art reflects more or less faithfully the 'fine art' of its period, and often, lacking other evidence, we can deduce the character of the fine art only from the surviving examples of the more commercial product; this is pre-eminently the case with early China, where we have to rely on little but the decorative bronze castings for our knowledge of artistic styles, and with prehistoric India, where the material—painted pottery and engraved seals together with half a dozen figurines in the round—is again sadly inadequate. But although the boundary between fine and applied art be indeterminate, the two provinces are none the less really different. Excavation in Egypt has furnished us with an endless variety of examples of the applied arts of the finest quality and in every sort of material; but if from those alone we were to conjure up a picture of Egyptian art it would be astonishingly unlike that presented by the statues, the reliefs and the paintings which come from the temples and the tombs. Egypt is indeed unique in the conspectus of its ancient art which it affords, illustrated at every stage by masterpieces, so that our first study should be of Egypt and, in Egypt, of the course of the major arts.

In a history of man's cultural progress any discussion of the fine arts of painting and sculpture might seem to be out of place. A great work of art results from the genius of an individual and may reflect only in a very small degree the conditions of contemporary society;[1] thus the astonishing pictures of Altamira and Lascaux were painted at a time when man's manner of life and his moral and intellectual outlook were those of the primitive savage, and if sculpture were to be accepted as a criterion then a comparison of the 'Venus of Willendorf' with one of the statues of Mr Henry Moore might lead to the conclusion that for thirty thousand years civilization had been stagnant.

On the other hand, our understanding of a people or of a period will be sadly incomplete unless the art of that people or period be taken as an

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essential element of its culture. But from that point of view what really matters is not the production of a masterpiece but the public reaction to art in general. Most people, at most time, have demanded, though for very different reasons, the representation in plastic or pictorial form of natural objects; their demand has been met by men who may be either artists or craftsmen. The latter, possessing no more than technical ability, are inspired only by the tastes of their clients—they follow the current fashion, make what the public wants, and so reflect faithfully the spirit of their time. The artist expresses himself in his work, but will seldom lose sight of his public, and in so far as he is a child of his generation the self which he expresses is germane to his people and period; he may be an innovator, breaking new ground, but if he succeeds in winning popular approval then his work can fairly be said to represent the spirit of his age and country, not as he found it but as he has helped to mould it.

But here a *caveat* is called for. In the ancient Levant the artist's public, to which he had to appeal and which he might influence, was for the most part strictly limited. Not only were his patrons confined to the aristocracy, but very little of his work would ever be seen by the people at large; the 'spirit of the age' which he represents is in fact that of a numerically small *élite*.[2] Strictly limited also was the sphere in which the artist might work, at least in those countries, Egypt and Mesopotamia, which afford us the best material for study; he was not at liberty to give free rein to his imagination, to make his own choice of subject or even to strike out a new line in technique. His patrons did not regard a work of art as something having an independent value, something to be judged by aesthetic standards; it was utilitarian, a means to an end which had nothing to do with art as such, and if they required it to be beautiful that was because by its beauty it better fulfilled its useful function. That was not the point of view of the artist, who was interested in his work as such; but he was obliged to accept its limitations on the whole and could even profit by them, much as the poet may profit by the discipline of the rigid sonnet-form, so that on the rare occasion on which he flouts convention the modern spectator is almost shocked into disapproval.

*Egypt*

Egyptian art was from the outset representational and, subject to certain conventions, realistic. For the earliest stages of its development there is no good evidence, but from the beginning of the Dynastic period we have an ivory statuette of a king (Pl. 33, a) which, though isolated, is enough to show the natural bent of the Egyptian sculptor untrammelled by convention. It is amazingly naturalistic; the attitude and gestures are imposed from within, not dictated by any stylistic tradition; this weary and disillusioned old man, having none of the aloof assurance of the later Pharaohs, is a living organism; we have here not a monument but a human presence.

Something of the same sort, though technically cruder, can be seen in the

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carving in relief on the so-called 'Lion palette' (Pl. 33, b); in it a number of figures, men, birds and a lion, combine to make a realistic group in which all are related together by action or by interest; it is a picture intended to produce a three-dimensional effect, an illustration of a single event in time and place, not a statement of a general truth. When we turn from this to the famous mace-head of Khasekhamui (Pl. 15) the change is evident, for though the background incidents are pictorially treated and though the king's figure retains a certain vigour and lively tension yet its hieratic pose suggests a symbolic conception; the relief illustrates not any one event but a recurrent function of royalty. Still more is this the case with the palette of Narmer (Pl. 31, b); the minor figures bear no spatial relation to the main group so that their presence has to be explained by reading rather than by visual apprehension, and the king slays his enemy by a symbolic gesture that is without movement or emotion. Pharaoh inevitably overcomes his foes, and the palette is a monumental work stating that general truth.

Thus early was there imposed on Egyptian art the convention which was to last almost throughout its history.

The convention results from the uses to which the fine arts were dedicated, i.e. to the furnishing of temples and of tombs. In the private houses there were no statues of any sort. In the house of a rich man stone door-jambs or lintels might bear carved inscriptions, but scenes in painting or in relief found a place only in the private chapel in the garden; the walls were indeed painted, but only with some decorative scheme based on architectural or floral motifs, not with pictures in which men or animals played any part. The sculptor and the painter were not decorators, nor was it their aim to appeal to the aesthetic sense of the spectator; their purpose was far more serious, on the one hand to assert the divinity of Pharaoh, on the other to secure the well-being of a man's soul. Temple art and tomb art were thus differently inspired, but both were essentially religious and both could express the ideas inherent in them only by the help of a style which removed their subject from the realm of normal life, from all considerations of space and time.

By the time of the Fourth Dynasty the style had been fully developed and was set for good and all. The exquisite wooden reliefs of Hesire (Pl. 31, a) and the tomb paintings of Rahotep in the Third Dynasty, the magnificent diorite statue of Khafra (Pl. 34, a), the triads of Menkau-ra and the famous 'Sheikh el Beled' of the Third Dynasty, these embody all the principles which later artists, even allowing for the deviations of the Amarna revolution, were faithfully if not slavishly to observe. It is not true that Egyptian art stagnated, or that its history is simply one of slow degeneration; changes were made and innovations were introduced, such that a statue or a relief can be dated with tolerable accuracy on internal evidence alone; but none the less, there is an astonishing continuity, and for the most part changes, when they occur, are not due to any novel aesthetic but reflect some modification of religious belief.

In Egyptian painting and relief—and the two are almost identical in so far

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as the relief is invariably low[3] and was generally enhanced by colour—the formed style involves certain conventions which to the modern European eye may appear primitive and almost puerile; it is indeed the permanence of these features that induces the mistaken idea of the 'changelessness' of Egyptian art. In the carved or painted scenes there is no perspective and no illusion of depth;[4] generally speaking the human figures, identical in size, are aligned along a single base, in profile, with no background to suggest their setting; even when, as in the hunting scenes, animals may be shown scattered over the field at different levels, each is normally given a separate ground-line which tends to join up with others and to divide the figures into separate registers. The principal character—the king in a temple relief, the dead man in a tomb—is represented on a very much larger scale, commensurate with his importance, and always with what has been called the 'paratactic' convention whereby the head and legs are drawn in profile and the torso frontally; the smaller figures may be treated in the same manner or may be entirely in profile; in either case they are little more than silhouettes with a minimum of internal detail. All this sounds primitive, and indeed the Egyptian artist did perpetuate the naïve conventions of his proto-Dynastic forebears, but he did so deliberately. He was quite able to draw a human figure in any position—in the tomb of Rekhmirê (early Eighteenth Dynasty) there is a three-quarter back view of a naked girl, admirably done; he could draw figures not all on one plane but grouped one behind another, witness the wailing women on the funerary barge in the tomb of Neferhotep of the same date (Pl. 37, a); he could draw figures full-face instead of in profile, as we see in the tomb of Nekht, and could even, by decreasing the size of figures so that they seem to recede in space, suggest perspective; true linear perspective he did not recognize any more than did the artists of China (there is one possible attempt at it in the el Amarna period); all the rest he understood but with such rare exceptions as have been cited above rejected as alien to his purpose.

The ancient Egyptian tomb was designed and furnished with one end in view, the continued life and the assured well-being of its occupant. The portrait statues hidden in the *sirdab* of the Early Dynastic *mastaba* were not in any sense memorials; they were the man himself, and took the place of his flesh-and-blood body, should that decay, and guaranteed his personal immortality. The tomb-chapel reliefs served the same function, and further promoted his happiness;[5] he is represented as standing or sitting to 'watch' (that is the term used) the scenes of agriculture, hunting, feasting, industry and so on which are painted or carved on the tomb walls; he is not dead, but as an inhabitant of another world he takes pleasure in watching the activities of the world he used to know (Pl. 38, a). There is in this something of magic; the pictured offerings of food do, like the actual foodstuffs offered in the tomb, provide sustenance for the soul, the ostentatious display of wealth may secure wealth in the after-world, and the funerary rites depicted may be a

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lasting guarantee of life as well as a source of satisfaction; but the tomb's owner plays no part in these vivid scenes; he simply watches them. The tomb portrait then is not that of the dead man; it is that of the man as he lives in the hereafter, and therefore it must represent him as the same man indeed, but divorced from human life. The primitive convention whereby the limbs are composed inorganically does just this; it sets before us all that makes up the body but removes it from actuality; the man that we see is isolated, takes no part in the life spread out in front of him and is rid of the trammels of space and time; the curious feeling of awe that assails the modern European confronted with such a tomb relief testifies to the success of the Egyptian sculptor's use of a primitive convention. Of that success the sculptor was fully conscious, and every care was taken that the formula for it should not be lost.

In a number of Egyptian tombs the carving is so far incomplete that the figures—sometimes mere sketches—still show the 'grid' by which the artist was guided in making his drawing. Until lately it has been assumed that this was a *mise aux carreaux*, the squaring of the ground to assure the accurate enlargement of a small-scale sketch. Now Dr Eric Iversen has pointed out that to square a sketch for reproduction you make the squares arbitrarily, as big or as small as you may think fit, but in the hundred or so Egyptian grids preserved the squares always intersect the bodies, whatever their scale, at exactly the same points and divide them into exactly the same parts; the squares, then, were not originally imposed arbitrarily upon the figures but the figures are composed deliberately upon a system of squares. The system is based on the theory that each part of the human body has a fixed ratio to the other parts; for the artist the constructional proportions represent a standardization of the objective proportions, i.e. the real ones as they exist, not as they happen to be seen in perspective by the human eye. The units, identified with the human arm and its parts, represent a series of ratios independent of their values as actual measures of length. Thus the smallest unit is the width of the fist (= 4 fingers plus the thumb, reckoned as $1\frac{1}{3}$ fingers, total $5\frac{1}{3}$ fingers), and this makes the side of a square; the total height of the figure from sole to forehead will then be 18 squares, the length from wrist to elbow 3 squares, the foot 3 squares, from the sole to the top of the knee 6 squares, sole to base of buttock 9 squares, to elbow of hanging arm 12 squares, to arm-pit $14\frac{1}{2}$ squares, to shoulder 16 squares; this is the canon of the Third Dynasty relief of Hesire, and it is scrupulously maintained down to the Twenty-sixth Dynasty, and even then, when a new canon was introduced, it was due not to any artistic refinement but to a change in metrology.

The canon, which applied to sculpture in the round equally with relief or painting, is clearly an idealization of the human body, far removed from the realism of the ivory statuette of early times. But the evidence of realism induced by the whole conception of tomb sculpture went much farther; the virtual elimination of all muscular development counteracts what may in outline seem an active pose; the planting of both feet firmly on the ground

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regardless of the position of the legs nullifies all physical tension; if the dead man lives and moves it is with a life and a movement not of this world.

The same principles were applied to temple sculpture, though for a different reason. Pharaoh was in very truth a god, and therefore he, too, must be represented *sub specie aeternitatis*, unconfined by time or space; his statues must be monuments embodying superhuman majesty; with such an idea any naturalistic rendering of momentary activity would be out of keeping. That the 'other-worldliness' of the Pharaoh's statue was an effect at which the artist consciously and deliberately aimed is proved by a striking exception to the rule. On certain wall reliefs, e.g. one of Seti I at Abydos, the king is represented as offering to the temple god (in this case Osiris) a statuette of himself prostrate in adoration before the deity, and one such statuette survives, a figure (now in the Cairo Museum) of Ramses II (Pl. 34, c). In the whole range of Egyptian art there are very few things more alive and more realistically human than this royal portrait. The explanation surely is that here, for a moment, Pharaoh renounces his divinity in self-abasement before the greater Power; it is his mortal nature that must be emphasized for the purpose of this momentary act; but at all other times an inorganic rigidity becomes the god in human form just as it does the 'life-in-death' pictured on the wall of a tomb.

In the tombs the dead man 'watches' scenes of life in the normal world; in the temples—i.e. in the mortuary chapels of the kings—there are reliefs illustrating the functions of royalty. Obviously here the artist has more opportunity for freedom, for his subjects are taken from life and the majority of the characters he represents, peasants, craftsmen, sailors and servants, shown in dramatic and often in trivial action, have in themselves no claim to other-worldliness. But even here there is no spatial illusion and the figures are incorporeal and non-functional.

The first impression made on the modern spectator by many of these scenes of agricultural labourers at work, boat-builders, huntsmen and the like is that of extreme vivacity, as for example in the case of the fighting boatmen in the tomb of Ptahhotep (Fig. 89), the musicians and dancer in the tomb of Djeserkaresonb or, for the Eighteenth Dynasty, the wailing women from Neferhotep's tomb (Pl. 37, a). It is perfectly true that sometimes the artist (who, as has been urged already, was quite capable of drawing in the most realistic fashion) did let himself go, overriding the conventions, but even when he observed them faithfully we find a variety of posture and significant gesture which scarcely needs the snippets of recorded conversation (interpolated as on a modern 'strip') to bring the picture to life. None the less, the more we look at even the gayest of them, the more do we realize, almost uneasily, how remote these pictures are from our world. The figures, whether drawn in true profile or with the 'paratactic' distortion, do not suggest—and are not intended to suggest—three-dimensional figures; their gestures are imposed upon them by the scheme of the picture and are not muscular

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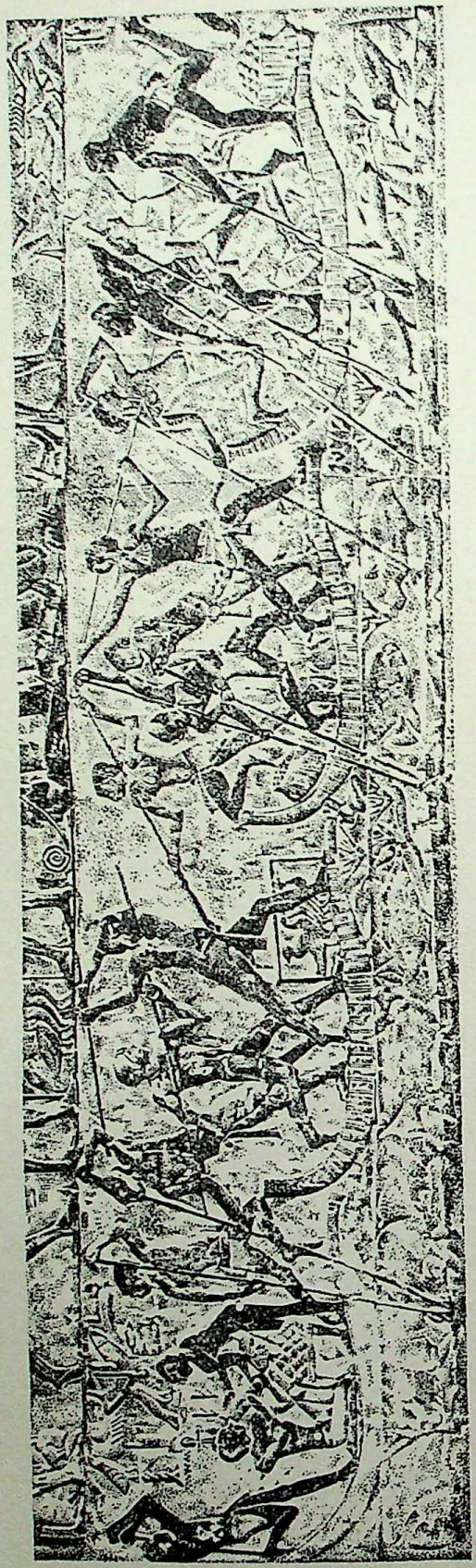

FIG. 89. Fighting boatmen from the tomb of Ptahhotep.

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activities inspired by their will; they are, at their best, pleasing silhouettes thrown upon a flat screen. When the artist has to represent animals he is less inhibited, for they are not subject in the same degree to religious taboos; but even so, although the treatment of the individual beasts may be lifelike and their actions appear spontaneous, there is still no spatial illusion and little or nothing in the way of related grouping.

The tomb pictures are not biographical (except in the hunting and boating scenes the tomb owner plays no part other than the onlooker's) and they are not incidental; they illustrate, sometimes in successive phases, the typical and regularly recurrent events of life and in that sense they are removed from actuality and become symbols. The tomb paintings and reliefs were not meant to instruct the modern spectator (and when once the tomb was finished no Egyptians saw them at all) but were for the dead man to watch; they were not records of his life but glimpses of the still surviving and constant life of earth, and those glimpses had to be brought into harmony with the changed personality of the one onlooker. The gay and lively subjects must not only be generalized; they must be so treated as to lose all suggestion of transcience, of functional corporeality, of space and time. So, too, in the temple reliefs Pharaoh himself is represented as taking part in the scene pictured; but his acts are those recurrent and symbolic acts which manifest the royal godhead—many of these are really magic—and where, as in the mortuary chapel of Sahurê (Fifth Dynasty), a royal victory is recorded there is no battle scene (for Pharaoh was *ex officio* victorious) but the gods of Egypt lead in the foreign captives. 'What was aimed at was not to stress the lasting significance of transient events but to show static perfection revealed in acts.'[6] The same convention as prevails in tomb sculpture serves the not very dissimilar purpose of the temple reliefs. Not until the Nineteenth Dynasty, when Egyptian art was declining and the religion of imperial Egypt had warped the old ideas, do we see Pharaoh in the forefront of battle playing the part of captain of the host rather than of god (Fig. 92).

Up to this point our study has emphasized the consistency with which the Egyptian artist subordinated his style to the religious or at least unworldly nature of his subject. But the beliefs which he so scrupulously interpreted had another side which introduced a curious anomaly into art, at any rate so far as sculpture in the round was concerned.

Pharaoh was a god; but at the same time he was himself, one Pharaoh of a line of divine ancestors, an individual in his own right. The owner of the tomb was no longer of this world, and the statue which the mourners placed in the hidden *sirdab* or in the tomb chamber was meant to be the lodging for his soul should his actual body no more serve as such; but the lodging must be one that the soul—*his* soul—would recognize as familiar, and when the soul entered it the living thing that resulted must be no changeling, but himself. The statue, therefore, must recall the man that he had been.

The realistic art which we saw in the proto-Dynastic ivory (Pl. 33, a) was

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perpetuated in Egyptian portraiture, and in this branch of art the Egyptian sculptor proved himself a supreme master. But here again he was working for other than aesthetic ends; his portraits were carved not for their own sake, not as memorials of the dead, like Roman portrait busts, but for tombs and temples, and hence arose that extraordinary contradiction inherent in every Egyptian statue. In obedience to the formula described above the body is lifeless, inorganic and immobile, the limbs have no separate function, the arms hang limply or are stiffly arranged—in a seated figure generally held against the sides with the lower arms resting on the thighs—with no purposeful gesture; and in a standing figure the legs suggest no muscular energy but, with the soles of both feet planted solidly upon the ground, seem to be no more than massive pillars supporting the trunk, and if one leg be advanced it is but a diagonal prop reaffirming immobility. And crowning this rigid negation of life is a face whose lifelikeness is unmistakably individual. The combination should be ludicrous, but such is the art of the sculptor that we today are conscious only of a personal presence superbly dignified and in some way awe-inspiring.

That a clash of opposites could be so successfully resolved is due to the sculptor's deliberate choice of what should be the content of his portraits. That they should represent individuals was essential to their religious function; there must be a likeness, but that need not be confined to physical resemblance, and what the artist attempts to render is the character of his subject. Obviously such insight and such skill were not at the disposal of every maker of images, and there are plenty of Egyptian statues whose blank faces, though not all of a pattern, betray nothing of the inner man. But where a really great artist is concerned—sometimes in the Old Kingdom, more often in the Twelfth Dynasty, occasionally in the Eighteenth and as late as the Saitic period—his work leaves no doubt as to the general aim of his art. The heads of Khafra (Pl. 34, a), of the Sheikh el Beled, the obsidian head of a nameless Twelfth Dynasty Pharaoh (Pl. 35, b), that of Thutmose III (Pl. 35, c), and the unknown Saitic head in Berlin, to mention only a few, are amongst the most sensitive character-studies ever expressed in stone. But never is there any suggestion of mood. Character is real and constant, but moods are transient; character, suitably idealized and sublimated, is a necessary element in a true portrait, but the passing mood could not possibly accord with the static body to which even gesture has been denied; the artist's task was to leave out the ephemeral and the accidental and to retain that absolute character which, in so far as it is independent of time, has that much in common with the body. It was indeed a case of abstraction. In the sculptor's workshop which was excavated at el Amarna there was found a series of stucco heads modelled with such exact verisimilitude that they gave the impression of being death-masks moulded on the human face; they were studies for heads to be carved in stone, but even in the 'revolutionary' el Amarna period no sculptor carved a head at all like them. The first sketch

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reproduced faithfully the man as he looked at a given moment, the finished work was meant to immortalize what he was.

The continuity of Egyptian art was interrupted by the religious changes brought in by Akhenaton. The suppression of all the old gods involved the abandonment of the stock themes hitherto employed for temple reliefs; the only subject now allowed was that of Akhenaton and his family worshipping the sun's disk, a scene repeated with wearisome monotony on walls, columns and stelae. In the case of tombs, a changed belief in values set aside all tradition; the dead man no longer 'watches' the activities of a world in which he can himself play no part; on the contrary he proudly puts on record the leading incidents of his own life on earth, his devotion to Pharaoh and the honours that Pharaoh has bestowed upon him. The divine and the mystic elements are thus eliminated and art becomes wholly human. This was true even for Pharaoh himself. Since Akhenaton was not a member of a divine hierarchy and therefore a being of another world, but was none the less divine, everything about him was godlike, not only his ceremonial acts but all the intimacies of his family life, and where a former king of Egypt might be suckled by a goddess, the el Amarna artist could show Akhenaton embracing his wife (Pl. 36, a). Akhenaton talked much of *Ma'at*, 'Truth'; what precisely he meant by the term is uncertain, but the artist was at liberty to interpret it as 'realism', and delighted to prove that even the physical deformity of a Pharaoh was an attribute of godhead. The new creed insisted on 'life', and art therefore becomes more lively.

In subject, therefore, and in treatment, the art of the el Amarna period departs widely from precedent; symbolism has given place to straightforward representation of real people and of actual scenes. To achieve this figures tend to be drawn in true profile instead of in the old paratactic convention, gestures become natural and significant, buildings in the background tie the scenes down to a definite place; once at least an artist makes an attempt at linear perspective and once, in the famous wall-painting of the little princesses seated at the foot of their father's throne (Pl. 37, b), he tries to produce a three-dimensional effect by the use of shadows and highlights. It would be easy to exaggerate the extent of the change in techniques. Already, in the preceding reign, the influence of Cretan art had led to a greater naturalism, to a more pictorial arrangement and to an appreciation of the scenic value of the wide spacing of figures; the caricatures of Akhenaton are in direct descent from the deliberately comic figure of an emaciated cowherd in a Middle Kingdom tomb at Meir and akin to the starving peasants in the Old Kingdom pyramid of Unas (Fig. 90); the artists were innovators in so far as they aimed at dramatic effects, but their means were for the most part not original. The portrait head of Nefertiti, and the even finer head of Akhenaton (Pl. 35, a), prove that there was at any rate one great master of sculpture at el Amarna, but most of the work is second-rate—perhaps because of the haste with which everything had to be done rather than of the lack of skilled artists; thus the

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best reliefs in the el Amarna style are those in the tomb of Haremhab, done after Akhenaton's death, when life had returned to the normal and there was time to work properly.

Because the style resulted from a religious revolution which collapsed with its founder's death and its tenets became anathema, Egyptian art promptly reverted to the old tradition. But the 'revolution' was not without lasting effect. In the case of tomb reliefs direct influence was confined to an occasional dramatic touch, but it was soon nullified by a new religious attitude towards the after-life. Instead of 'watching' the scenes of man's activities the dead man

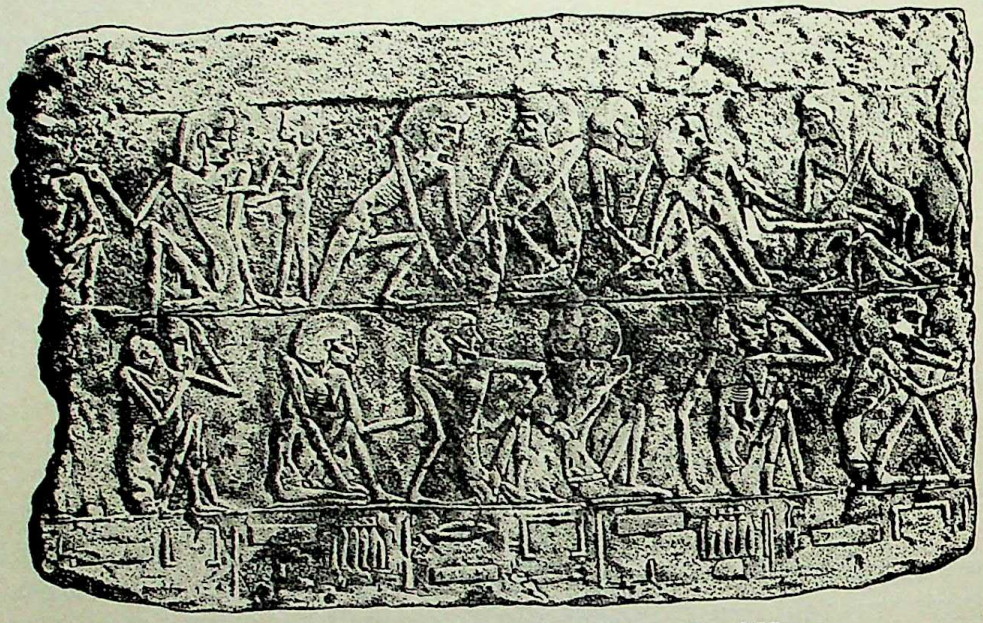

FIG. 90. Starving peasants from the tomb of Unas.

is now shown taking part in them. The whole conception on which tomb art had been based is now altered, and though the scenes may be superficially similar the spirit has gone out of them; in the old days they had been designed to give pleasure to the dead man, but henceforward they were routine pieces meant to act as charms. The priests of Amon had discovered and popularized the mechanism of salvation and the tomb walls reproduced the formal vignettes of the Book of the Dead; the elaborate funerary rites, the perils of the passage to the next world, the weighing of man's soul, such scenes repeat *ad nauseam* the phantasmagoria of robot gods and demons, but all life has gone and with it all the pleasure of life.

On the other hand the sense of drama, which can already be detected in the art of the early Eighteenth Dynasty but has free play in that of el Amarna, did not disappear with Akhenaton; it was to inspire all the royal reliefs of the future. A magnificent painted casket from the tomb of Tutankhamen (Pl. 38, b) gives us scenes of Pharaoh in battle with the Syrians and again hunting lions

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33 (a) *Prcto-Dynastic ivory statuette of a king*

(b) *The Lion Palette*

(a) [B.M.

(b) [B.M.

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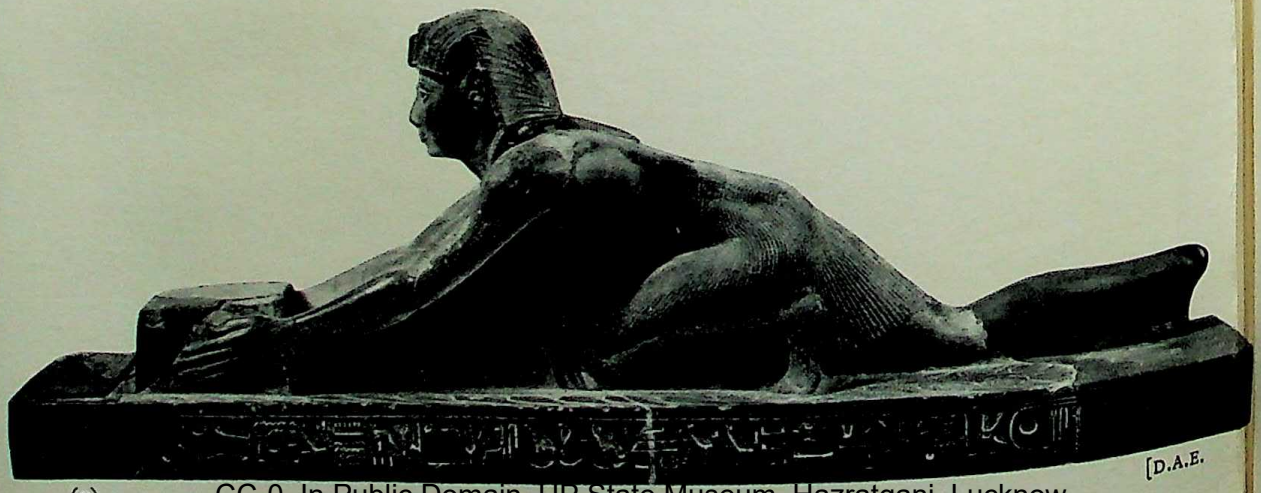
(a) [D.A.E.

(b) [M.E.

34 (a) *Statue of Khafra*

(b) *Ramses II*

(c) *Prostrate figure of Ramses II*



(c) [D.A.E.

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(a) [*photo Chuzeville*, Louvre

(b) [C.G.F.

35 (a) *Head of Akhenaton*

(b) *Twelfth Dynasty head*

(c) *Head of Thutmose III*

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(a) [D.A.E.

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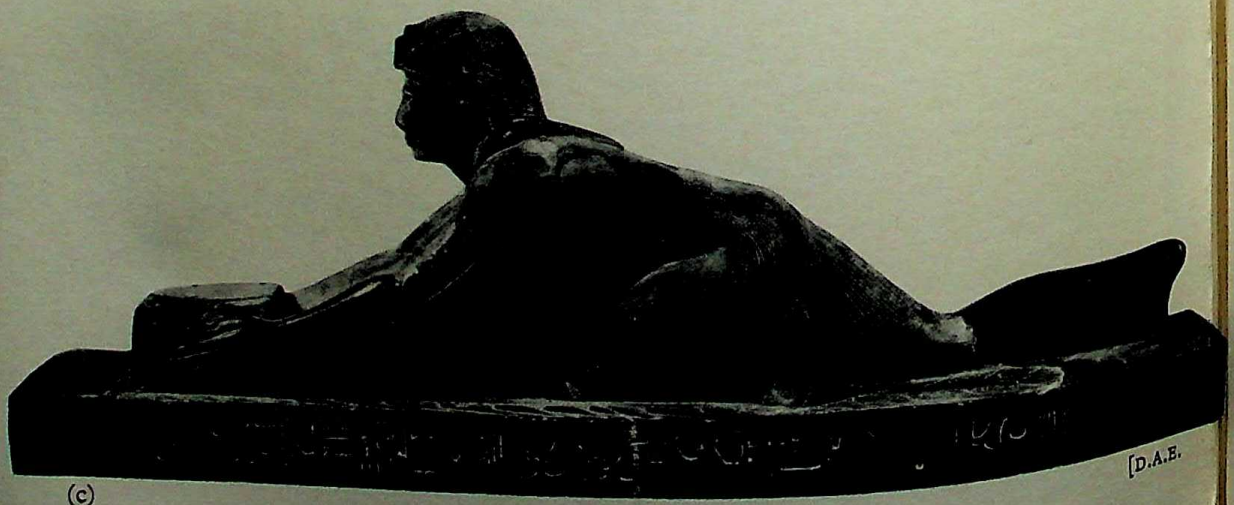

(c) [D.A.E.

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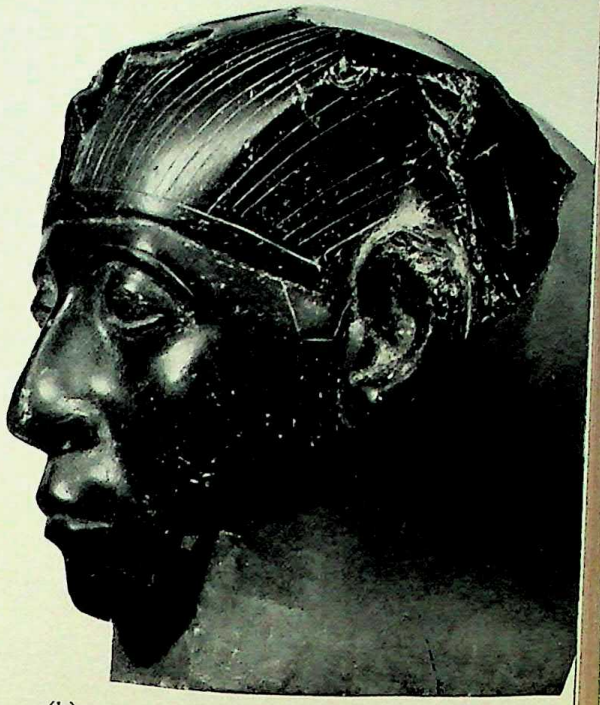
(a) [*photo Chuzeville*, Louvre



(b) [C.G.F.

35 (a) *Head of Akhenaton*
(b) *Twelfth Dynasty head*
(c) *Head of Thutmose III*

(c) [D.A.E.

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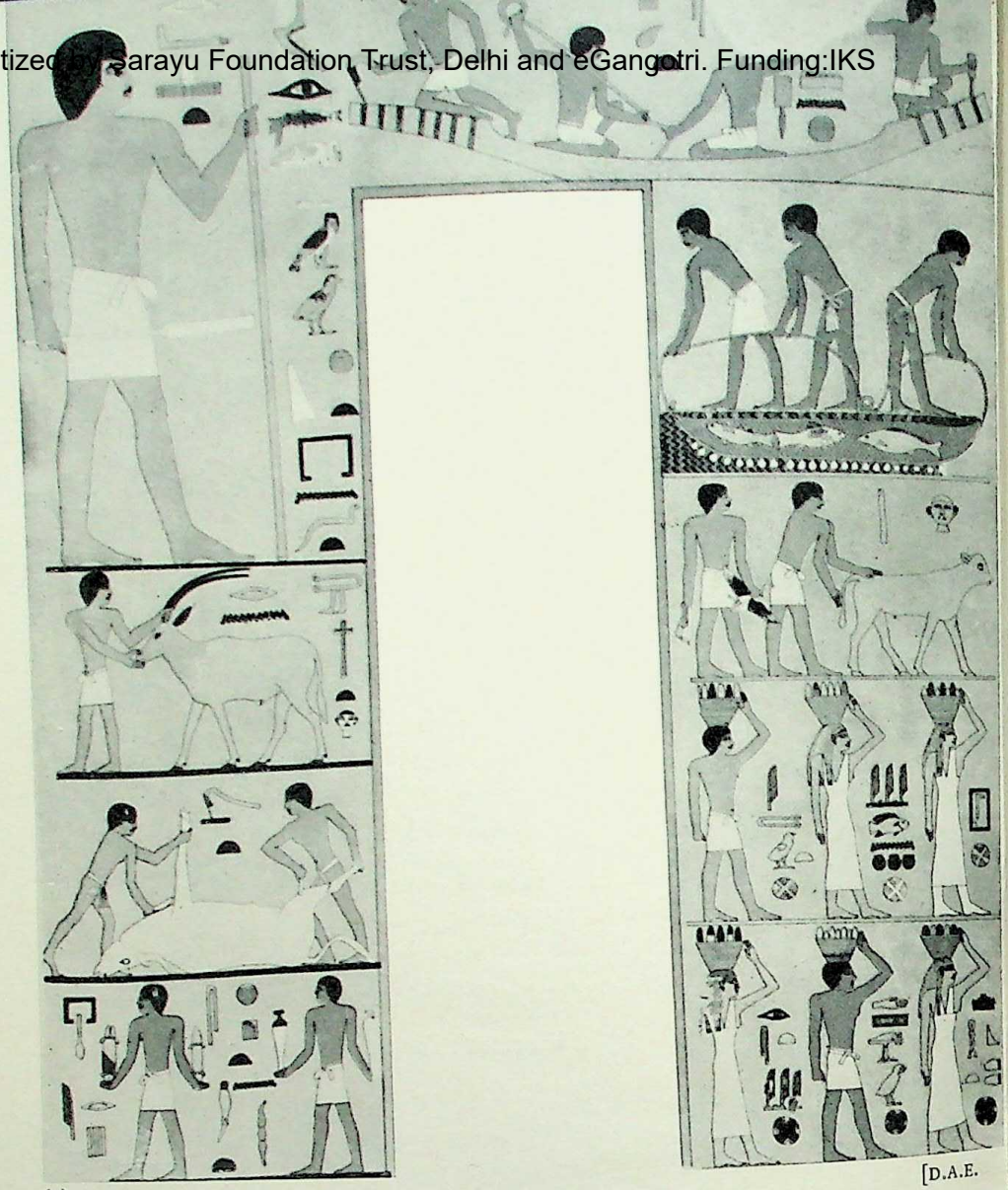

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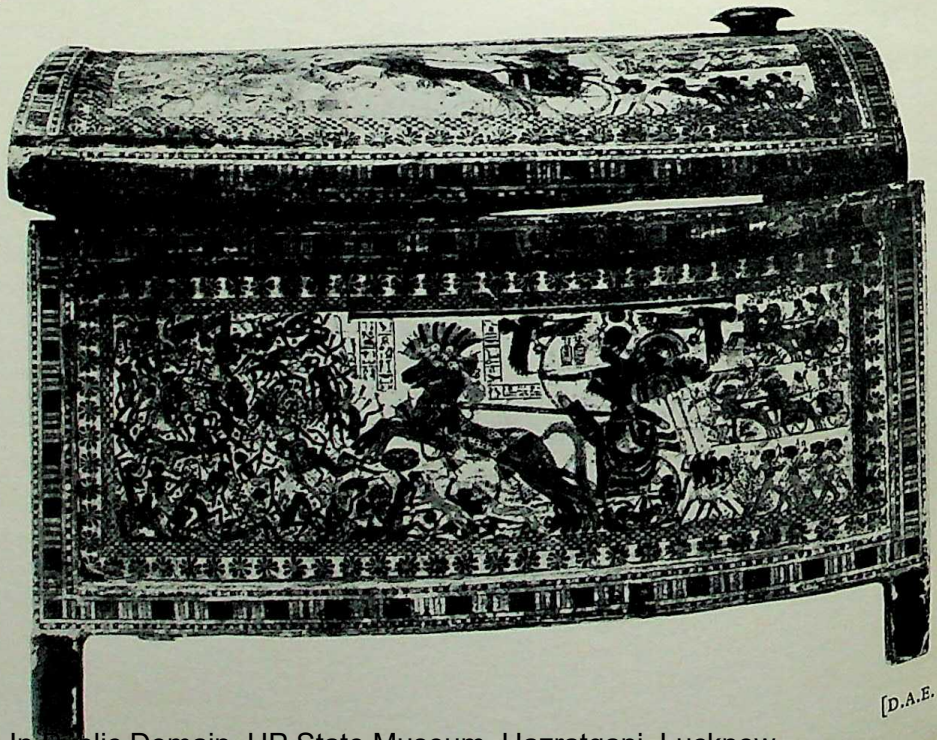

[D.A.E.

(b)

38

(a) *Death watching Life*

(b) *Tutankhamen's painted casket*

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39

*Mari: wall painting. The king's investiture*

[*photo Chuzeville,* Parrot

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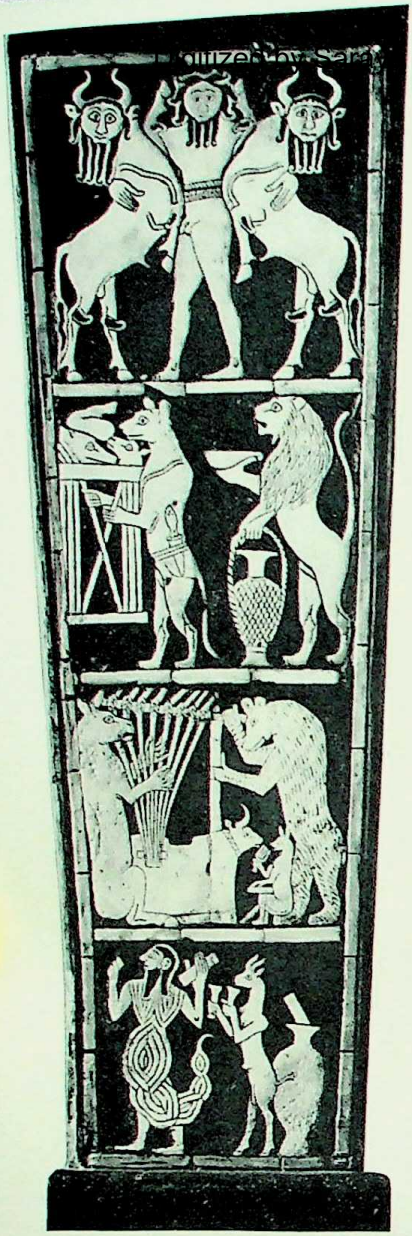
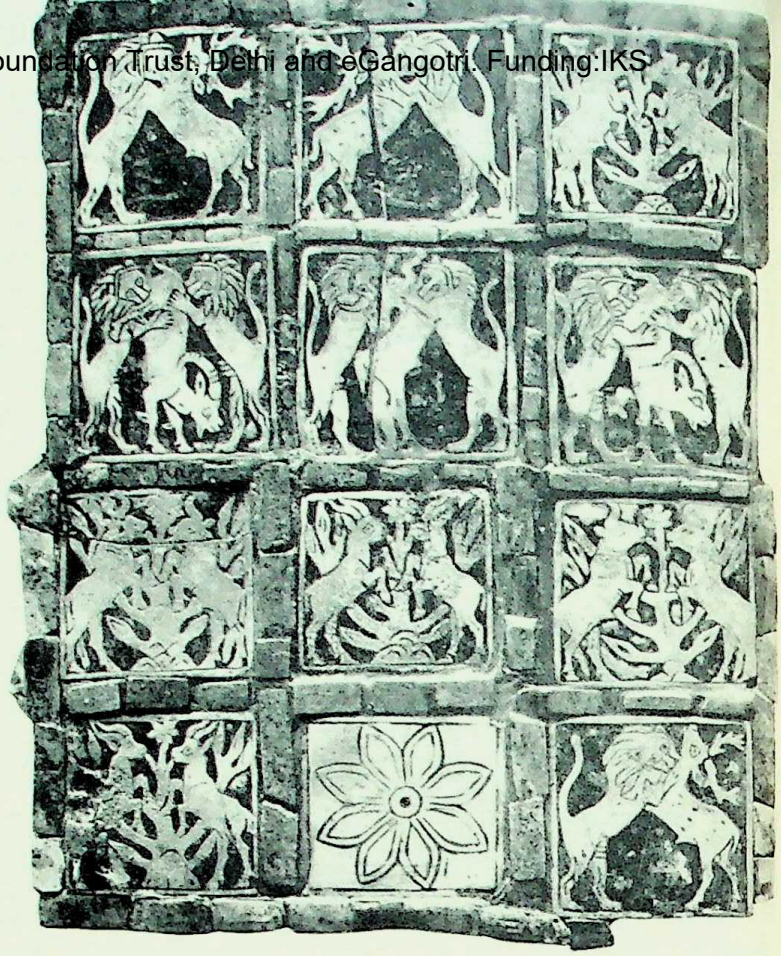


(a) Penn]



(b) [I.D.A.

(c) [Penn.

40 *Ur shell plaques*

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which are altogether in the el Amarna spirit—incidentally they show, especially the lion-hunt scene, how strongly el Amarna art has been influenced by that of Crete. These are still 'typical' scenes, though the details are treated with a naturalism that is quite new; but when we turn to the huge monumental reliefs of Seti I at Karnak (Pl. 36, b) and of Ramses II and III we can see at once how the episodic actuality of el Amarna has been adopted as the starting-point for a more ambitious essay. The artist chooses for his subject a unique event (very different from the regularly-repeated functional acts figured on reliefs from Narmer's palette onwards) which occurred at a definite time and in a definite place; it is therefore an episode, to be treated with as much realism as he may choose to employ for the setting and for the details of his picture. But on the other hand he is executing a royal monument the purpose of which is to manifest not the casual but the permanent triumph of the divine ruler; realism therefore must be counterbalanced by symbolism. The old convention whereby Pharaoh is figured on a much larger scale than anyone else shows his superiority and concentrates the onlooker's attention on him; as himself the conqueror he must appear in the thick of the battle, but attitude and expression must imply not the effort but the inevitability of victory, the unique exploit illustrating a cosmic rule. This equipoise between the actual and the symbolic which is the secret of monumental art and, for the Egyptian, was a new departure, was attained by the artists working for Seti I, but it was too elusive to be reduced to a formula, and the sculptors of the next reigns were not sufficiently endowed with imagination to dispense with formulae. The vast compositions that sprawl over the walls of Thebes and Abu Simbel, celebrating the doubtful victory of Kadesh, exhibit a curious mixture of the formal and the pictorial, monotonous registers of identical figures alternating with a wild tangle of bodies which at least suggests the confusion of battle; but, although some of the detail is clever and lively enough, yet the whole is impressive for little more than its size. The sculptor, working strictly to the rule of the traditional canon, was still able to create, as in the seated figure of Ramses II now in Turin (Pl. 34 b), portrait statues almost worthy to rank with the masterpieces of old; but where, as in the reliefs, the link with the past had been broken, he is at a loss, having no ideal of his own.

### *Mesopotamia*

When we turn from Egypt to Mesopotamia the first thing that strikes us is the relatively small amount of material available whereon to base our judgement of art. Of reliefs and of sculpture in the round only a few score examples, covering the whole of the long history of the country down to 1200 BC, contrast sadly with the thousands which Egypt can boast. None the less, there are amongst these few some which are outstanding in the whole range of ancient art and prove that the Mesopotamian sculptor amply played his part in the development of his country's civilization; and since the great majority



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of the works that have come down to us belongs to the early stages in that development we can trace with some confidence the genesis and nature of his contribution.

Of painting scarcely anything survives. At Warka a few traces of colour do no more than prove that the faces of the inner walls of the Jamdat Nasr period were adorned with paintings *in tempera*, but the designs of them are lost. At Tell Uqair, in the 'Painted Temple' dated by the excavators to the Uruk period, i.e. to the late fourth millennium BC, two more or less complete animals and human figures preserved only as high as the waist show that the wall decoration was of an elaborate pictorial nature.[7] For the time of the First Dynasty of Babylon, *c.* 1750 BC, we have the paintings in the palace at Mari[8] which alone are in fairly good condition. These show a curious mixture of styles. The main scenes are formal and stereotyped; the rectangular framed picture of the king's investiture (Pl. 39) might be an enlargement from a cylinder seal; on the long frieze the sacrifices by water and by fire look like different copies of the stelae of Ur-Nammu and of Gudea, and the gryphons, sphinxes and human-headed bulls are in a convention long since stale. On the other hand, the minor figures, a fisherman, a soldier, a man leading a bull to the sacrifice and men gathering dates from the tall palm-trees, are naturalistic, free and vivacious. It may be significant that two techniques are employed; the freely-drawn figures were sketched in outline in black paint with a surety that bespeaks a practised skill, but in the investiture scene the outlines were impressed with a point in the wet plaster, and seem to have been the work of an engraver rather than of a painter.

Interesting as are the Mari wall-decorations neither their number nor their date—for they must be regarded as works of the decadence—would justify us in basing on them any general appraisal of Sumerian painting. For any idea of style and treatment in earlier times we have to fall back on the circumscribed evidence of cylinder seals (a comparison which the Mari drawings seem to warrant) and of engraved shell plaques. Of the latter the Ur cemetery has supplied a large number belonging to the close of the Early Dynastic period, *c.* 2600–2500 BC, small rectangles of polished white shell engraved and enriched with niello (Pl. 40). They have not, of course, the colouring of wall paintings (though as such colours were always flat, without shading, they matter comparatively little) and lines cut into a hard substance cannot be expected to have the quality of the free-hand lines of the draughtsman; they could be compared rather with the wood-blocks of the mediaeval German artists. But in their often naturalistic drawings of animals and in their calculated balance of black and white—which can even achieve a colouristic effect—they are admirable in themselves and surely imply that the lost paintings were of no mean order of art.

More than once in my earlier chapters it has been necessary to describe Sumer as a country in which stone is lacking, and that feature must here be emphasized again because of the effect it undoubtedly had upon sculpture.

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The Mosul area, it is true, yields that soft 'alabaster' which was regularly used by later Assyrian palace-builders for their wall-reliefs, but in the early days the knowledge of this seems not to have reached the craftsmen of the south, where civilization was most advanced; although the artists of Tell Asmar employed it freely, in the delta towns it occurs but seldom as an alternative to the rather rough limestone which could be got from the high desert bordering the valley. For important sculptures the Sumerians imported diorite (and sometimes trachyte), a hard stone capable of taking a fine polish, which was brought overseas in ships of the 'Magan' line, probably from Oman; it would appear that this was not quarried but came in the form of boulders, and the size and shape of such could not but influence the sculptor's work. The stone was expensive, and had to be used to the best advantage. Rarely would a block be long enough to make a life-size standing figure; much more often it lent itself better to one in a seated or a squatting position, and it is curious how frequently a seated Sumerian statue suggests the shape of the natural boulder from which it was economically carved. Further, because as will be seen later all statues were portraits,[9] and because the artist had very little interest in the anatomy of the body, only the facial features being important, the head is in most cases too large for the body; rather than reduce the scale of the portrait head to the dimensions demanded by his inadequate block of stone the sculptor was prepared to do full justice to the head at the body's expense. This naïve disproportion which we see even in the splendid statues of Gudea (in one of them the head is one-fifth of the total height) results directly from the lack of stones big enough to satisfy the requirements of sculptor and client.

Yet another consequence of the dearth of stone was to drive the artist to the use of other materials; reliefs and statues in the round were freely made of copper or bronze and sometimes of gold. Because the metal could always be melted down and re-used the chances of such works surviving are small, but enough is preserved to prove that from the Early Dynastic period onwards they were produced in great numbers.

From the al'Ubaid period we have nothing more than the carefully modelled and highly stylized terra-cotta figurines of goddesses found at Ur; these, while scarcely deserving the title of sculpture, must none the less be taken into account, for they are the sole forerunners of the art in which the next (Protoliterate) period was to show itself inexplicably confident and mature. Such qualities are most obvious in the magnificent gypsum vase from Warka (Pl. 42, c), belonging to the Uruk period; it stands about 3 feet (1 metre) high and is decorated with three bands of relief, the width of these diminishing from top to bottom to conform to the slightly tapered shape of the vase. The reliefs —in the top register the ritual workshop of the goddess Inana, then a procession of men bringing gifts, and below a row of rams and ewes—are shallowly cut but with a delicate surface-modelling which makes the figures stand out in sharp contrast with the background; the whole effect is austere, with dramatic

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action and even variation of pose reduced to a minimum, and yet astonishingly alive; the squat and plumply built gift-bearers are really carrying their burdens, are organic and individual, and in the upper register the figures are not merely juxtaposed but are related one to another in intention and in space. Much the same thing can be seen on the cylinder seals of the period. These may be schematically composed with, for instance, groups of animals antithetically arranged, or may be more pictorial, scenes of adoration or cult ritual, but always the figures are alive and in motion and, particularly in the scenes, the spatial relation is strongly emphasized; the artist—and the best of these seals are genuine works of art—aims not at a pattern but at concrete representation. This combination of lively observation and stylistic restraint is continued in the better works of the Jamdat Nasr period, such as the stone bowls decorated with figures of bulls in high relief or the little steatite carving of a wild boar found at Ur; in some degree it survives in the dedicatory limestone plaques which, in the temples, served as supports for offerings, but these are as a rule technically poor and wholly uninspired, mere records of some pious act performed. It might have been assumed that, with the beginning of the Early Dynastic period, the sculptor's art was in a decline if the evidence of the plaques had not been contradicted by that of such an outstanding work as the stele of Eannatum in which hieratic symbolism, formal and severe, is skilfully combined with the realistic battle scenes wherein not only violent action is portrayed but there is even an attempt, naïve but not unsuccessful, at spatial perspective.

Eannatum's stele, primitive though it be, yet possesses those monumental characteristics which find their full expression in the stele of Naram-Sin (Pl. 18, b). Here a single historic occurrence, individualized by its setting, is so treated as to acquire permanent significence. 'The topography, though partly formalized, has convincingly concrete details, and both it and the incidents of the battle hold a subtle balance between the decorative and the dramatic. The roughly triangular grouping, for instance, fits the shape of the stone, but it also underlines the climax of the action; and the upward surge of the conquerors is balanced by the falling and collapsing figures, halted by the rigidity of the four doomed survivors on the right. The smooth cone of the mountain top, rising well above the impressive figures of the king, does not dwarf him in any way but seems to emphasize his human stature and at the same time check the impetuosity of his stride. For the king's posture epitomizes the movement of the soldiers, yet he appears almost immobile at the moment of his triumph, holding the enemy transfixed with fear, and though his towering figure has a symbolical quality, the spatial relation between him and his prospective victims has been made more concrete by the tilting of their heads at different angles, the lower ones looking increasingly upwards. The king is thus not only the symbolical and decorative but also the actual dramatic centre of the whole composition, and the empty surface surrounding him emphasizes his spatial isolation. This aloof-

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ness is enhanced, not minimized, by the divine symbols at the top of the stele.'[10]

This detailed appreciation of the Naram-Sin stele is not out of place because, although it is the only monument of the kind to have survived, it may none the less well have been typical of its time. Even in the cylinder seals of the Sargonid Age (Pl. 41), whether the subject be the traditional antithetically opposed animal group or a mythological scene pictorially treated, we find 'the subtle balance between the decorative and the dramatic', the violent action held momentarily in suspense, and the spacing of the figures so that each is isolated against a clear background and by its detachment gains enormously in value. In the glyptic art of Sargon's day there are qualities which distinguish it altogether from the Early Dynastic wherein the dramatic was sacrificed to the decorative and the crowded figures gave a pattern rather than a picture, and distinguish it also from that of the Third Dynasty of Ur and all succeeding periods. In those later times the monotony of subject, giving no scope for imagination, reduced seal-cutting from an art to an industry. But in sculptural relief also the high-water mark had been reached by the upsurge of Sargonid art, and thereafter the ebb sets in. The stele of Ur-Nammu (Pl. 42, a) is indeed a striking monument whereon the dignified symbolism of the adoration scenes, enlivened by the floating figures of 'angels' pouring heaven's waters on the earth, contracts but does not clash with the pictorial realism of the workmen who built the Ziggurat of Nannar; but the value of this as an artistic creation becomes less significant when we realize that it is almost identical with the stele of Gudea; the apparent originality of the Ur-Nammu relief is due to the accidents of survival, and in truth it is but one of a traditional series from which life was bound to fade progressively. In precisely the same way the relief that caps the text of Hammurabi's Code of Laws (Pl. 42, b) has won the highest praise; 'transcendent power and majesty on the one hand, dignified humility on the other, have been expressed with an economy of means and a convincingness never surpassed in ancient art', writes Groenewegen-Frankfort,[11] and it is indeed a dignified piece of sculpture and admirable in its technique; but the group is no other than an adaptation of that on Ur-Nammu's stele, nor is there here any invention but only a successful variation of a conventional theme.

If up to this point only reliefs have been considered, to the exclusion of sculpture in the round, it is because this was the field in which the Sumerian artist had the freer hand. The major reliefs at any rate were monuments intended to be seen by and to impress the public; it was a challenge which the sculptor had to meet as best he could, and the dramatic element which has been noticed in these works was one of his means to that end. Where reliefs were used for the adornment of buildings—in which case again they were meant to be seen—realistic representation could be combined with decoration; this can be seen in the bronze and copper reliefs of A-anni-pad-da's temple at al'Ubaid, in which the naturalism of the recumbent heifer (Pl. 23, a)

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is remarkable, whereas the great heraldic slab of the eagle grasping two stags is becomingly formal, symbolism prevailing over representation. But with statues in the round conditions were wholly different.

In Sumer statues were of two sorts only. In the first place there were the statues of the gods which were set up in the sanctuaries of the temples; these naturally had to conform with tradition and, though in human shape, must betray none of the passions or weaknesses of human beings; each deity must be identified by his or her attributes (which might be an animal supporting the throne or base of the image) but not by features or expression, nor must any hint of action impair the god's effortless omnipotence. Clearly here the sculptor's scope was limited. Statues of men, the second category, were needed not for public exhibition but for temple use. The pious Sumerian knew that there could be no well-being except by the favour of god, and that favour must be won by faithful attendance and prayer. Life was too short and too full for such constant devotion, but it could be managed by proxy; just as the deity was represented by an image made by man, so his worshipper might be symbolized in like fashion. Therefore he would have a statue of himself set in the temple, in the presence of the god's statue, and the effect would be the same as if the worshipper were present in person; obviously, if the statue was to fulfil its purpose, it must be a portrait of himself, since it was for himself that the divine blessing was asked, and the safest course was to show him in the attitude of humble prayer. This meant that while Sumerian statuary was strictly limited in range, confined to one or two conventional poses, the demand for portrait sculpture gave the artist boundless scope. But the client wanted something more than crude realism. He must be shown not quite as he really was but as he would wish the god to see him; he must appear at his best, and also must express the awe and the devotion that the sight of god should inspire; to that extent there must be idealization.

The earliest examples of such temple statues that we possess, the remarkable group from Tell Asmar (Pl. 43), illustrate very well, despite their archaic crudity, the ideal at which the artist aimed. The worshippers are shown standing upright with their hands clasped before their breasts in the attitude of prayer; their long skirts are simple sheaths, the upper part of the body together with the arms is schematized in a curiously geometrical fashion, but the heads, however grotesque they may appear, are individual and full of expression; there is an unmistakable awareness of the god's presence. The group includes one figure of a different sort, apparently a piece of temple furniture like the bronze wrestlers from Khafaje, a naked man kneeling; in this the treatment of the body is so lifelike and sensitive as to prove that the geometric stylization of the 'worshippers' is due not so much to the sculptor's lack of skill as to some established convention imposed upon him. Similar statuettes in gypsum and in bronze which were discovered at Khafaje, of a slightly later date in the Early Dynastic period, show that convention losing force; the drapery is for the most part still formless, but the torsos are almost

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realistic, the angular contour of the arms is modified to a natural attitude and there is a new variety of pose, as when one foot is advanced in the act of walking instead of both being planted stolidly in line as props for an immobile body; and now too there are seated as well as standing figures. Before the Early Dynastic period came to an end the Sumerian sculptor, without departing from the formal tradition, had advanced so far that out of the almost comic 'worshippers' of Tell Asmar there had developed real works of art. Naturally, where the demand was great (and the little temple statues are found on any site from Ur in the south to Mari in the north-west) quality is uneven, so that even in the portrait faces the intense piety of early days may degenerate into trivial and unmeaning smugness; but in the better examples the original religious significance is combined with an artistic appreciation of form and texture which is wholly admirable. Thus a female figure (Pl. 44, a) (e.g. one in the British Museum) may wear a cloak draped over the left shoulder and covering the upper arm which, though broadly treated, does suggest the form of the body and is interesting in itself; a male figure in Copenhagen (Pl. 44, b), seated cross-legged, which for dignity and expression is one of the most striking pieces of the series, wears a short fringed skirt and the musculature of the legs as seen below it is rendered with surprising realism; a seated figure of a woman temple-chorister found at Mari (Pl. 45, c) is so instinct with life that it is hard to recognize in it the traditional 'worshipper'. As his technique improved with experience the sculptor was no longer forced to rely on the adventitious aid invoked by his predecessors, paint and inlay; when working in limestone or alabaster he might still have the eyes, and perhaps the eyebrows, set with shell and lapis lazuli, but this was probably because the client had ordered a polychrome statue with black hair and coloured flesh-tints; but when he worked in diorite his sensitive modelling, to which the high polish of the stone did full justice, was far more expressive than any painted image. The Gudea statues are the latest examples preserved to us of the 'worshipper' series, and the finest; in their dignity of conception, in their delicacy of execution and in their emotional appeal they surpass anything that we have of earlier date and must be reckoned amongst the great works of art of the ancient world.

For the immense advance in artistic performance which is signalized by the Gudea statues some at least of the credit must be given to the sculptors of the Sargonid period. We have already seen that in work in relief they were innovators to an almost revolutionary extent; two heads sculptured in the round, one of a woman (found at Assur) and one of some local kinglet or governor from Adab, portraits but not necessarily 'worshippers', are strangely different in character from the ordinary run, and the male head in particular is strikingly individual. But the real art of the time is summed up in the magnificent bronze head from Nineveh, probably a portrait of Sargon himself (Pl. 45, a); this is a masterpiece in which the qualities of the metal are utilized with sympathetic understanding while a profound insight into human

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character sets upon an idealized head the unmistakable stamp of individuality. The art of portraiture in which the Sumerian thus excelled had reached its zenith by the time of the Third Dynasty of Ur (Pl. 46) (Gudea is now known to have been contemporary with Ur-Nammu) and flourished for some time after that; a diorite head found by the French at Susa, believed to be a portrait of Hammurabi (Pl. 45, b) in his later years, is tragic in its intensity and yet beautifully restrained in its rendering of old age.

*Syria*

The Mesopotamian monuments on which our judgement must be based are few and far between, and for the Kassite period there is nothing of import. But even if the school dwindled and perished it was a great one while it lasted, and it cannot but have influenced artists in other lands. From Alalakh, far away to the west, comes a diorite head, probably a portrait of Yarim-Lim, king of Yamkhad in the first half of the eighteenth century, which while not actually carved by a Sumerian at least owes much to Sumerian art; and it is difficult not to recognize some trace of Sumerian influence in the unique warrior who flanks the King's Gate at Hittite Boğazköy (Pl. 47, a). Syria and Anatolia, however, throughout the Bronze Age contributed little to the development of the major arts. The local schools of northern Syria and of the Phoenician coast were certainly productive, but did not attain a high level of performance; as Professor Frankfort has well put it, 'they lack cultural continuity; their art shows a succession of more or less promising starts which lead nowhere'.[12] Much of their work was imitative, based upon foreign originals; this is particularly true of the southern Phoenician towns. Where, as happens more often in the north, we find an art of a more indigenous sort, Hurrite art, its interest is local rather than general. Ugarit has yielded numerous statuettes in bronze and in silver which, though not without traces of Sumerian or occasionally of Aegean influence, are yet markedly individual; but in themselves they are far inferior to what was being produced in Egypt or in Mesopotamia, and it is difficult to maintain that from them arose any later art of intrinsic value. Alalakh has produced a few stone carvings which deserve mention here only because they seem to illustrate the beginnings of the Syro-Hittite school which was to dominate north Syria in the early Iron Age; it is possible that some reliefs from Carchemish belong to the Bronze Age (a point on which authorities are not agreed) and if so they must be taken as examples of that Hurri art which otherwise is deduced from cylinder seals and from later monuments.

*Hittite*

Closely associated with Hurri art is that of the Anatolian Hittites. This, so far as is known, was a late development, none of the monuments being necessarily earlier than the fifteenth century BC, and, considering the political importance of the Hittites, a disappointing one; as a recent writer on the

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subject has said, 'In actual fact it should not be assumed that the art of the New Kingdom offers any unexpected display of beauty, profusion and sophistication. The sculpture of the period is rather inferior, and the other artistic remains are conspicuously rare. When mention is made of Boğazköy, Alaca Höyük, the rock-carvings of Yazilikaya and of a number of scattered finds here and there in central Anatolia, nearly all has been said.[13]

The gate sculptures of Boğazköy, apart from the King's Gate warrior, are modelled on north Syrian precedents. The Yazilikaya reliefs (Pl. 47, b), a complete picture-gallery carved in the living rock, are an astonishing *tour de force* if only for the immense scale of the whole thing; from the point of view of Hittite religion they are of supreme importance; from the point of view of art they certainly represent the highest attainment of the Hittite sculptors. In the best of them (for not all are by the same hand, and the quality is uneven) the technique is excellent, and there is a delicate modelling of the surface combined with the deliberate intention of keeping the figures to a single plane and accentuating the outline so as to produce the effect of silhouettes isolated against their background; the flat two-plane relief is characteristic of Hittite art in general—we see it at Alaca Höyük and in the earlier reliefs at Carchemish—and it can be childishly inept, but the Yazilikaya artists have refined it with surprising success. But for all their incidental virtues these rock carvings can hardly be ranked as masterpieces of the world's art. Here, in what was probably their holiest sanctuary, close to the capital of the empire, a powerful Hittite monarch would undoubtedly employ the best native artists of his day, but their performance will not stand comparison with what was being done in Egypt; theirs is an art essentially provincial, here seen at its best, and apparently unable to advance beyond the Yazilikaya level. For the Alaca Höyük reliefs, which compared with Yazilikaya are almost comically crude, are the direct ancestors of the Syro-Hittite reliefs of the early Iron Age, some of which are artistically admirable; but the development is not along the lines of Yazilikaya; it results from influences wholly alien to the Boğazköy school. In a study of the ancient art of the Middle East it would be impossible to omit that of the Anatolian Hittites, but it would be wrong to over-estimate its merit or its importance.

*India*

In lands farther to the east the paucity of evidence baffles the historian of art. There is no stone in the Indus valley, all had to be imported, as was the case in Sumer also, and for that reason stone sculpture was likely to be relatively rare and on a small scale. This seems to be confirmed by excavation, for there have been found at Mohenjo-daro (apart from inconsiderable fragments) only one human bust, one head and a small headless seated figure, and at Harappā two fragmentary statuettes; from Mohenjo-daro comes also one bronze figurine of a dancing girl.

The Harappā figures, one of a standing youth and the other of a dancing



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youth (Pl. 48, a and b), are masterpieces of sculpture. The red stone torso of the standing youth (Pl. 48, b) is a direct transcript from nature in so far as anatomical truth is concerned and is definitely Indian in type;[14] but a certain idealization which removes it from mere realism, and the wonderfully sensitive modelling of the surface, might have been due to a Greek sculptor of the fifth century BC. The grey stone dancer is, by contrast, of a more effeminate type; the complicated poise and the swing of movement are rendered with consummate skill, and if, as Sir John Marshall inferred from the abnormal thickness of the neck (the head, in this as in the first figure, was made separately) the dancer was three-faced, this was as beautiful a representation of the youthful Śiva Natarāja as India was to produce in any subsequent age. Of the Mohenjo-daro figures the bust of a bearded man wearing a cloak (Pl. 49) with trefoil decoration, is a remarkable piece of work; the inlaid pattern of the dress might both in technique and in motif have been derived from Sumer, but about the head there is nothing Sumerian; not only is the type of face different, but the half-closed eyes concentrated on the tip of the nose seem to proclaim this to be a *Yogi* and therefore essentially Indian. Because all emotion and virtually all expression are deliberately eliminated (deliberately, the subject being what it is) this head is perhaps less striking than the other which, though of more summary workmanship, is more in the nature of an individual portrait, that of a bearded man with plaited hair, in which character is suggested with the utmost economy of means. The seated figure, simply but well modelled, is perhaps of interest chiefly as proving that the sculptor had a fairly wide range. The bronze figure of a naked nautch girl (Pl. 48, c), in spite of the conventional elongation of the arms (there is the same exaggeration in a similar but much rougher example also from Mohenjo-daro) is a charming little *jeu d'esprit*, beautifully modelled and instinct with life.

The two main Indus valley sites have, then, between them yielded no more than half a dozen incomplete examples of sculpture to serve as criteria for the artistic output of as many centuries. Yet these few do enable us to glimpse an art of a very high order and of great originality. If to their evidence we add that of some of the engraved seals (Pl. 50) we can with but little hesitation affirm that the Harappā art was not sterile but motivated and made possible the Dravidian art of later ages.

### *China*

For China the evidence available is even less than that for India. A few fragments of worked marble found in the town ruins of Anyang prove the existence in the Shang era of large stone sculptures but tell us nothing about their character or quality; for that we must look to the carvings in marble or limestone, mostly of very small size, which come from the tombs. These figurines would appear to have been decoration attached to articles of furniture so that they would be more correctly described as objects of applied art and judged in the same way as the zoomorphic bronze vessels of the same period,

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but they may at least give some idea of the major works which have disappeared. For the most part they represent animals—tigers and elephants, pigs and owls, but one shows a man seated upon the ground, dressed in a garment the embroidered patterns on which recall the incised decoration of the bronzes (Pl. 51); the little figure (it is only 6 inches—0·15 metre—high) is boldly sketched, with no attempt at realistic detail but with a highly skilled appreciation of form and a three-dimensional rendering which is eminently sculpturesque. From such a figure as this, and from the bronzes—particularly the famous elephant in the Musée Guimet (Pl. 52), which may be of the Chou period but certainly is in the Shang tradition (the circumstances of its discovery are unknown)—it is fair to conclude that the enduring character of Chinese art had been formed as early as the fourteenth century BC and that the technical excellence of the Shang bronzes was paralleled by the artistic quality of Shang sculpture.

*Crete*

The only other country which has yielded evidence of noteworthy performance in the fine arts during the Bronze Age is Crete. No large-scale sculptures have been found there, but small bronzes and ivory carvings, coloured stucco reliefs and fresco paintings illustrate an art completely different from anything that Egypt or Mesopotamia can show. Granted that Crete borrowed the technique of fresco-painting from Asia and granted, too, that the one recognizable design on the scanty fresco remains from Alalakh does anticipate the motif of wind-blown grass which occurs at and is characteristic of Knossos, it is none the less true that the Cretans evolved an art entirely their own, inspired with a spirit alien to all Middle Eastern thought, aiming, one is driven to suppose, not at any magical or symbolic use but at a purely aesthetic satisfaction. Some of the subjects such as those of bull-fighting, boxing-bouts and dances may be drawn from 'games' which were in the nature of religious ritual, but it is the spectacular and not the religious aspect that is emphasized, and for the underwater scenes with their rocks, fish and nautili, for the 'landscapes' with their riot of wild flowers, the birds, the hunting cat or the leaping deer, there is no religious basis at all, only the desire for decoration and the love of nature.

The desire for decoration does not show itself only in the frescoes which covered the palace walls; it extended also to pottery. It is a commonplace of history that a primitive people may produce clay vessels painted with elaborate art but, with increasing wealth, will prefer table-services of metal-bronze, silver or gold, caring nothing for mere crockery, so that the potter can find a market for no more than the plain vessels intended for kitchen use. The Cretans of the Middle Minoan period made the exquisite egg-shell wares adorned with patterns in red and white on a black ground which were even exported as luxury goods to Egypt (Pl. 14, b); it is more surprising to find that in the Late Minoan II period, when the metal-workers were fashioning in

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gold and silver the splendid jugs and goblets pictured on the walls of Egyptian tombs, clay vessels were still held in honour and were decorated with painted designs which for painstaking artistry are in no way inferior to the frescoes (Pl. 24).

The love of nature is unmistakable, and the observation of nature is equally manifest, but all this is, in the frescoes, subordinate to decorative effect. Not only will the artist combine the leaves of one plant with the flowers of another, but he never treats his scene realistically as a 'landscape'; the whole ground of the painting may be divided into bands and patches of colour—red, pink, yellow, blue and grey—whose sinuous outlines bear no relation to anything in nature, and against it the plants are drawn regardless of the changes of background and, if they happen to come high up in the composition, may be drawn sideways or upside down; it is 'landscape' only in terms of decoration, and the effect is curiously alive but not lifelike.

'Aliveness' is indeed the peculiar feature of Cretan art, alike in painting and in sculpture. The Sumerian sculptor portrays his client in the absorbed quietude of worship, the Egyptian figures him as 'life in death' or, in the case of Pharaoh, as a being of another world for whom action is only symbolized by attitude. The Cretan artist had no use for such suspended animation. The famous bronze showing the athlete in the middle of his somersault over the back of the galloping bull (Pl. 54, b), the ivory youth leaping forward, his head down, also from a bull-fighting group, these are as vigorous in action as sculpture can be; but even where no violent movement is involved, as in the ivory statuette (Pl. 54, a) or in the faience Snake goddesses (Pl. 53), there is a tension and an alertness giving the same impression of potential vigour. 'Überhaupt Leben', 'life absolute', is Ludwig Curtius's description, and Groenewegen-Frankfort comments, 'The phrase might well serve as a motto for any treatment of Cretan art, for movement, organic movement, seems of its very essence; movement in beast or man, in wind-blown flowers with petals dropping, in the writhing stems of creepers clinging to rocks, even in the rocks themselves, which seem a substance barely solidified'; but she goes on to say that the movement here is of a peculiar kind, effortless, unhampered, and self-contained in that it is balanced by a counter-movement which makes it appear self-centred yet never at rest.

Without doubt Cretan art, even when the subjects chosen by the artist are such as bull-fights, dances or harvest processions, had a religious basis. With the details of that—about which much has been written—we are not concerned, but we may summarize the matter by saying that the Cretan artist interpreted his religion as the complete acceptance of the grace of life. If we turn from the island to the mainland of Greece we shall see that, although Mycenaean art is technically identical with Cretan, so that one even suspects that the best of its works were made by Cretans in the service of Mycenaean patrons, yet it is in a measure secularized and has lost something in the process. The Vaphio gold cups (Pl. 55) show men fighting bulls, but it is a

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real fight, not a ritual, and in the design there is none of that antithetical movement which renders a phase of action complete in itself; the Mycenaean dagger-blades with their magnificent polychrome inlay have hunting scenes —i.e. purely secular scenes—but the violent action pictured so skilfully has not that compensating balance on which the Cretan at home would have insisted. The technique could be practised far afield, but the spirit was not for export, and only in its native island did Minoan art attain the level at which it must rank as the most inspired of the ancient world.

## THE APPLIED ARTS

The major arts have been dealt with regionally because sculptors and painters, working as they did in nearly every case either for temples or for the rulers of the state, were profoundly influenced by the religious conceptions and by the political structure of their own countries; and because these were very different the inspiration of the artists manifested itself in different ways; the fine arts were, strictly speaking, local and national.

But with the applied arts the conditions are not the same.

Obviously, the technique is identical. The Sumerian artist who carved the reliefs on the great gypsum vase of Inana found at Warka could turn his hand to the decoration of a toilet-box for a lady of the king's court; the Egyptian who made portrait statues for the tombs of Eighteenth Dynasty nobles could in his spare time fashion the handle of an ivory spoon in the form of a swimming girl. Obviously, too, the canons which had been formulated for sculpture proper would be followed in these minor works also—the professional artist was too habituated to them to think of departing from them, and the craftsman naturally copied what everybody knew to be good and right. Superficially, therefore, the distinction between the fine and the applied arts might seem unwarranted.

But the toilet-box and the spoon-handle have no serious background. The man who makes any such thing is not doing honour to a god, manifesting the glory of a divine Pharaoh or securing the well-being of a man's soul; he is making a pretty thing which will take people's fancy by its prettiness and ingenuity and will sell at a fancy price. He is not bound by any conventions other than those which have become for him second nature; he can give free rein to his imagination and his whimsy, can appeal as profitably to the humour as to the aesthetic taste of his public but, if he is to command a market, he must make full use of his technical skill. The applied arts, therefore, are imbued with a totally different spirit from that of the fine arts, and they enjoy a vastly greater freedom of subject and of treatment; moreover, they circulate far more widely. Sculpture in the round, reliefs and wall paintings were for home consumption. It is true that a victorious Pharaoh might build an Egyptian temple in a Syrian town which he had added to his dominions, and would send statues of himself to stand in the temple or, more often, would

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send an Egyptian court artist to carve such statues on the spot; but relatively few of the Syrian townsmen would enter the temple to see Pharaoh's statue, and if they did it would be for them not an object of art but a symbol of their own enslavement. When, in an upsurge of patriotism, the citizens of Ugarit smashed the sphinxes of Amenemhet III, the statue of the wife of Sesostris II and that of the Egyptian governor of the town, they were destroying the evidence of foreign domination; but the same people would not in the least object to using—and treasuring—an unguent-vase of ivory or alabaster carved in the characteristic style of Egypt. The minor works of art were valued for their own sake; they were freely exported and they, not the great masterpieces, spread abroad the knowledge of the art of any one of the ancient civilizations. Where they found favour they would be copied by local craftsmen or would influence local styles. When, in the eighteenth century BC, Alalakh had control of the elephant reserve in Niya and so monopolized the north Syrian ivory supply,[15] the Alalakh craftsmen carved ivory objects in the styles of Egyptian, Hurrite and Aegean art indiscriminately (Pl. 28). At Ugarit were found a bowl (Pl. 56) and a patera of beaten gold, dated between 1450 and 1350 BC, in whose decoration the styles of Egypt, of the Aegean and perhaps of Mesopotamia are inextricably fused together with the rather naïve local Syrian art as solvent. From Enkomi in Cyprus comes a bowl of gold, silver and niello of which it is hard to say in what country it was made, so various are the possibilities suggested both by its technique and by its design. The craftsmen of the Phoenician coast towns industriously copied or adapted Egyptian motifs, their otherwise successful imitation being often betrayed by their use of the Egyptian hieroglyphs (which neither they nor their business clients could read) as meaningless decoration. Patterns used for the ceilings of Egyptian Twelfth Dynasty tombs were borrowed by the artists of Knossos. The gold and silver vessels brought as tribute by the Keftiu to Egypt are unmistakably Cretan—but whether they were made in Crete or on the Syrian coast it is impossible to say. The Egyptians were ready to learn from others, not only when they employed Aegean decorators to paint the pavement-frescoes of Amenhotep III and Akhenaton but when they adopted the Cretan motif of the *galop volant* for scenes of battle or hunt. In the earlier part of this chapter it has been made clear that the leading countries maintained each its own school of art in sculpture and painting, necessarily so, seeing that these reflected the several religions of the countries; and it is perfectly true that motifs originating in religious art might lose their content and be turned to mere decoration, so that the minor arts also to a large degree preserve their local character; but the interchange of traded goods was on such a scale, and popular designs were so freely imitated by foreign craftsmen, that the applied arts tended to become internationalized. By the fourteenth century BC the process had gone far. While it would be an exaggeration to speak of an 'eastern Mediterranean culture' at that time, we may be sure that a man of any standing in any eastern Mediterranean town would have amongst

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his household possessions objects decorated in the styles of various national schools of art, would take them all as a matter of course, and might be hard put to it to say in which country each had been made. This promiscuity is illustrated by the curious case of what is known to archaeologists as 'Cypriote White-slip ware' (Fig. 91). Some backward tribe, in Anatolia, apparently, made and used hand-made bowls faced with meerschaum clay, painted with

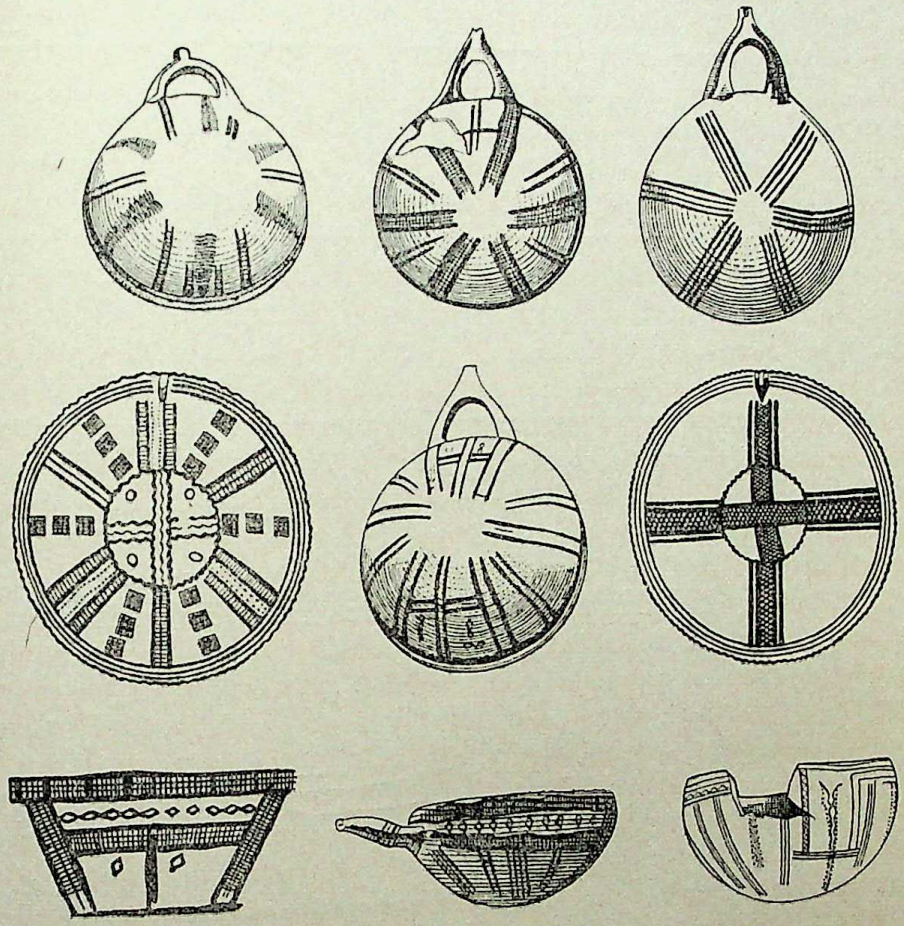

FIG. 91. 'Cypriote White-slip ware' (after Walters).

string-laced designs in red and black and furnished with 'wish-bone' handles. Examples were brought down into northern Syria, where hand-made pottery had not been seen for many generations, and found favour perhaps by virtue of rather than in spite of their primitive technique; later, some were carried across to Cyprus, and the always imitative Cypriotes, seeing that they were popular, began to manufacture very passable copies and, expanding a successful industry, exported them all over the eastern Mediterranean. A Syrian of about 1400 BC might, if asked, have said that his 'milk-bowl' came from Cyprus, or might have attributed it to some Syrian coast factory, possibly

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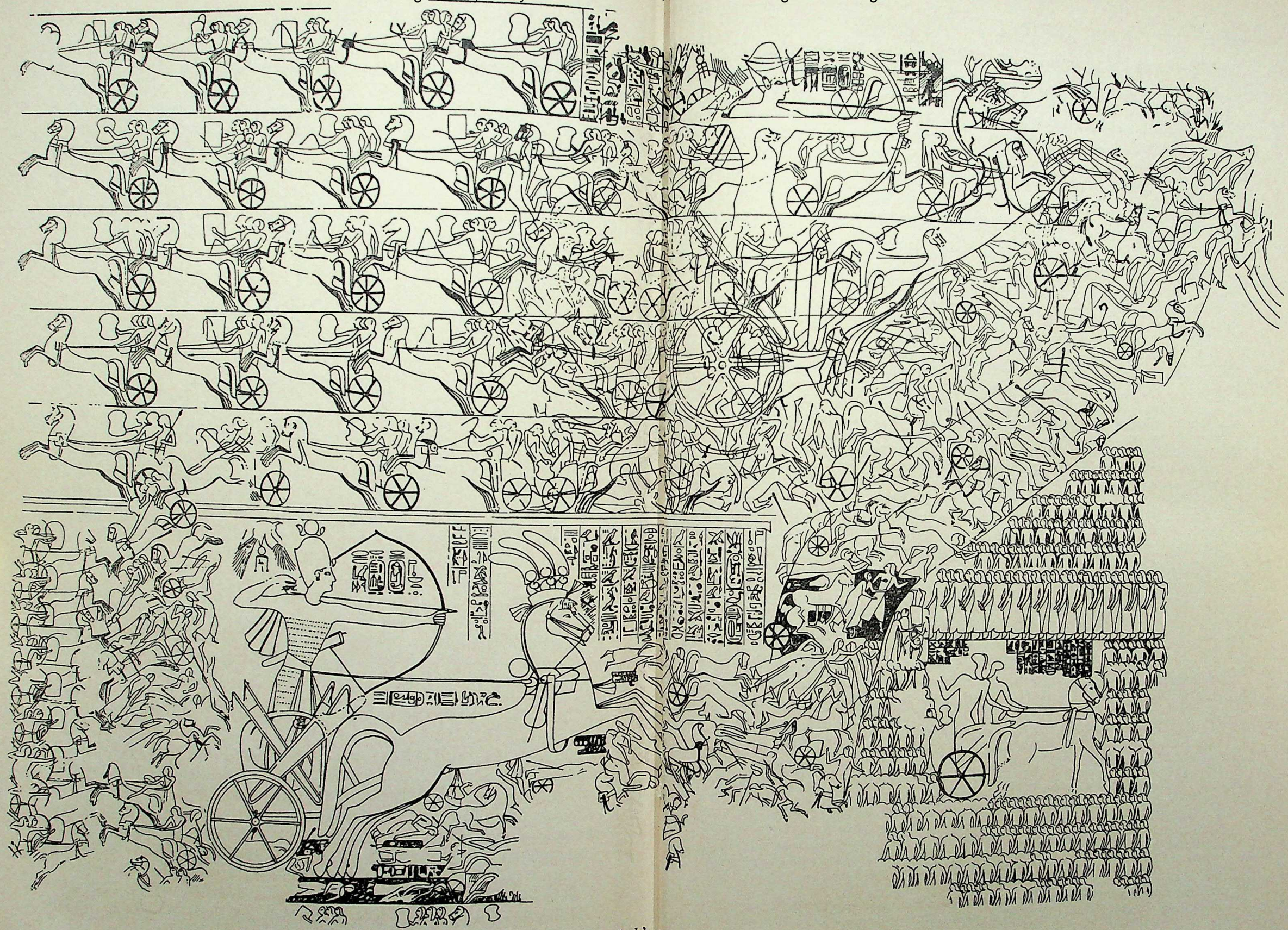

FIG. 92. 'The Battle of Kadesh' (after Frankfort).

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manned by Cypriotes; he would probably have had no idea that this fashionable and exotic object had anything to do with a barbarous Anatolian tribe.

The common familiarity with and acceptance of foreign art forms, an important factor in man's artistic and intellectual advance, was based on the active exchange through trade channels of the products of commercial studios and also, to some extent, on the work of peripatetic guildsmen travelling in search of employment. The process was interrupted by the catastrophic events that marked the beginning of the twelfth century BC, but it had already done much to widen men's minds and to prove to them that art has no frontiers.

## NOTES TO CHAPTER IX

1. In the opinion of Professors I. M. Diakonoff and J. S. Gasiorowski, an artist may outgrow the limitations of his surroundings and of his time, but his work will all the same reflect the conditions of contemporary society. The relation between art and the constituent factors of society is undoubtedly complicated and not always easy to apprehend.
2. According to Professor J. S. Gasiorowski, culture and civilization are primarily the expression of an élite, consisting of the intellectual, social and political leading elements in a given society. The opinion that the art of the ancient Orient has been exclusively destined for the élite is, for him, untenable. The colossal figures of Ramses II hewn in rock in Abu Simbel in Nubia, and the colossal figures at the doorways of the Assyrian palaces, even the lions of enamelled brick lining the walls of the procession street at Babylon in the time of Nebuchadnezzar were not for the élite only.
3. Professor J. Leclant draws attention to the technique of recessed relief and points to the existence of fairly deep relief work such as that of Ramses III at Medinet Habu.
4. Professor J. Leclant feels that the whole problem of Egyptian methods of rendering depth and even, perhaps, perspective deserves further study.
5. See note 16 on p. 758.
6. H. A. Groenewegen-Frankfort, *Arrest and Movement: An Essay on Space and Time in the Representational Art of the Ancient Near East* (Chicago, 1951), p. 50.
7. *Journal of Near Eastern Studies*, II, No. 2.
8. A. Parrot, 'Les Peintures du palais de Mari', *Syria*, XVIII (1937), p. 325.
9. Professor I. M. Diakonoff has contested the claim that pre-Sargonic Sumerian statues were portraits. Sir Leonard Woolley, however, maintained his opinion in face of this objection.
10. H. A. Groenewegen-Frankfort, *Arrest and Movement*, p. 164.
11. *Ibid.*, p. 168.
12. *The Art and Architecture of the Ancient Orient*, p. xxv.
13. M. Vieyra, *Hittite Art, 2300–750* BC. (London, 1955).
14. In front of each shoulder there is a deep depression made with a tubular drill. Sir John Marshall suggests that the holes were intended to take inlay in the form of rosettes such as appears on a terra-cotta from Baluchistan. To Sir Leonard Woolley it seems almost certain that they were to take a second pair of arms (the first pair also were made separately and fitted into sockets) in which case we have a (standing, not dancing) figure of the Śiva type.
15. On the presence of elephants in north-west Syria, see *supra*, pp. 584, 596, n. 31; 786; also R. O. Barnett, *Journal of Hellenistic Studies*, 68 (1948), pp. 6–7.

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CHAPTER X

# MUSIC AND LITERATURE

## MUSIC

It might well be said that of all the arts music contributes most to man's culture, if only because its appeal is direct, emotional and universal, requiring for its appreciation no intellectual effort and no sophisticated training: 'Give me the making of a people's songs and I care not who makes their laws' is a scarcely exaggerated tribute to the power of music. A history of human progress, therefore, which left music out of account would be sadly imperfect.

Unfortunately there is little that can be said about music itself. It is possible to describe at length the various instruments used for music-making; it is possible also to see on what occasions and for what purposes they were used and to judge therefrom the part which music played in the life of the people; and again, from casual references in the texts, it is possible sometimes at least to learn what emotional response the several instruments were supposed to elicit; but of the character and quality of the music we know nothing.

In 1915 Dr Ebeling published a tablet from Assur of the eighth century BC which gives in parallel columns the text of a Sumerian hymn on the Creation of Man and the Assyrian translation of it; in a third column on the left-hand side of the tablet there are, corresponding to each line of the hymn, groups of cuneiform signs which are no part of the text and might be the musical notation. Traces of similar signs used in the same way have been found on a tablet from Sippar which is not later in date than the sixteenth century BC.

Dr Curt Sachs, working upon this Assur tablet, arrived at the conclusion that the Babylonians (which term should include the Sumerians also) had a non-chromatic pentatonic musical system, but that their melodies were not bound to one rigid five-tone scale; they could range freely within four interrelated five-tone scales. He supported this view by an argument based on a seventh-century Assyrian relief showing seven 'Elamite' harpists who are welcoming the king with music; they are all playing on different strings; the numbers of the strings follow in intervals of five (the 5th, 10th and 15th, and the 8th, 13th and 18th) and, on the assumption that the Assyrian sculptor represented the scene with photographic exactitude, this must mean that the genus was pentatonic, either with major thirds and semitones, or with minor thirds and whole tones. On the basis of this, Sachs reviews other pictures of harpists in which the strings and plucking fingers are equally clearly shown, pictures not uncommon in Egyptian tomb reliefs, and comes to the

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conclusion that in Egypt, from the early third millennium BC, fifths and fourths, octaves and unisons, can all be found: 'It proves', he says, 'the use of pentatonically tuned instruments, although this in turn does not necessarily imply pentatonic melodies.'

Canon Galpin also deals at length with the 'notation' signs on the Assur tablet, and goes so far as to reconstruct the air of the Creation Hymn, but he rejects Sachs's theory entirely. Sumerian and Babylonian music, he maintains, was not pentatonic at all but heptatonic. While a five-note scale was widely circulated amongst primitive peoples in east Africa, the southern parts of Asia and Indonesia, the seven-note scale is the basis for Mesopotamian, Indian, Korean and Chinese music.[1] He does not accept the pictures of harpists as evidence, holding that sculptors and artists often omitted strings if space were limited, and confines himself to actual instruments or to names denoting a certain number of strings, e.g. the Akkadian *sabîtu* with its seven strings, and actual specimens of the Egyptian upright harp having twenty-one strings, i.e. three series of seven-note scales such as are found in the Chinese system also.

That two diametrically opposed theories should be deduced from the same evidence, namely the Assur tablet, is proof that the evidence is insufficient. Moreover, Professor Landsberger not only condemns Sachs's interpretation of the signs in the first column as pure assumption, Babylonian culture never having attained so high a pitch as Sachs's very intricate scale formation would imply, but further affirms that the signs have no connection with music at all.

Giving up, therefore, all hope of recovering from the material at present available the character of Bronze Age music, we can turn to the consideration of the instruments. In these Babylonia was extremely rich, and most of the types illustrated either by surviving examples or by representation in sculpture, etc., can be traced back at least into the Early Dynastic period, early in the third millennium.

*Instruments of Percussion*

*Clappers.* These are curved flat pieces of metal or of wood, sometimes mounted on handles, which were held one in each hand and beaten together. Such can scarcely be called a musical instrument; it is simply a more effective version of the hand-clapping universally employed to accentuate the rhythm of dance or song.

*Drums.* These differ from the clappers in being not merely rhythmic but tonal and tunable. There were several types. The commonest was a small instrument with a wooden body, circular, either straight-sided or bowl-shaped over which the leather was stretched and fixed, probably, by wooden pegs; a variant is hour-glass-shaped, and yet another had a terra-cotta body of a shape rather like that of a champagne glass on which the leather was made fast by a cord. These drums, which were played horizontally with both hands,

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could stand upright on the ground or be carried by means of a strap round the player's neck; in size they vary from 6 inches to a foot (0·15 to 0·30 metre) in diameter. Representations show us a larger kettledrum standing some 3 feet (1 metre) high, played by one player. The little drums might be used on any occasion, secular or religious; for temple use there were big drums whose note is compared to 'the bellowing of a bull'; these might be as much as 5 feet (1·60 metre) in diameter and were either suspended from poles or were stood on edge and were played by two men with drumsticks.

*Timbrels.* These might be either circular or rectangular, with shallow frames and normally one head only; they were used in temples to accompany certain hymns and liturgies. The square type may have been of copper.

*Sistra.* The spur-shaped sistrum is represented on the inlay of an Early Dynastic harp from Ur and an actual (but fragmentary) example was found there of which the 'jingles' strung on the wires were of white shell and therefore can have made but little noise. We have no later record of it, and it may have dropped out of use in Mesopotamia. It was at all times common in Egypt, and thence passed into Crete in Minoan times and is represented on the Harvesters' Vase.

*Wind Instruments*

*Flutes.* The vertically-held simple reed tube, sounded by blowing across one of its open ends, was from very early times a favourite instrument, especially for joyful occasions—Gudea of Lagash (*c.* 2150 BC) tells the Director of Music in the temple 'to cultivate diligently flute-playing and to fill the forecourt of Eninnu with joy'. It had three finger-holes, equidistant from each other, and according to Galpin could, by the help of the first and second registers of the harmonic series, produce a diatonic scale of seven notes with a sharp or tritone fourth; this scale could be extended into a second octave. One of the names of the flute was 'the seven-tone'; another was 'the long flute' or 'the large reed', and the names alone suffice to give its character. Besides its temple use it was a regular accompanist to love songs and was even thought to exercise a lascivious influence upon the hearer, so that according to a Jewish tradition the angel who warned Lot of the fate impending over Sodom said, 'There are flute players in the land, and the land ought to be destroyed'—a very different reason from that for which the flute was condemned by Alcibiades.

*Pipes.* The single pipe held at an angle, or horizontally, with the vibrating tongue of the reed between the lips, appears very early and is soon followed by the double pipe, actual examples of which were found in an Early Dynastic grave at Ur. It might be made of wood or reed, but was more often of metal, silver or copper; the pipes were about 10 inches long, slender, and with four finger-holes giving the octave. It is probable that even in the early period there was in use a variant in which the pipes were bent and had an upturned bell—or horn-shaped top opening; such 'bent pipes' are mentioned in a Sumerian

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list of objects brought to a temple. A tapered pipe (both single and double) was perhaps Syrian rather than Sumerian in origin, but it may be referred to in the Ishtar epic; it was a high-pitched instrument and the pipes being conical would sound an octave above the ordinary double pipe with cylindrical reeds. The double pipe is represented on a painted coffin of late Minoan date from Hagia Triada.

*Horns and Trumpets.* There is in the British Museum a conch-shell trumpet from Nineveh, and presumably such were in use from an early date. The bull's horn trumpet is mentioned on the cylinders of Gudea (*c.* 2150 BC), but before that time metal trumpets were being made. This seems to have been pre-eminently a temple instrument (for which its crescent form would further recommend it); in combination with the big drum it constituted 'full music' and, like the drum, was described as making a noise like the roaring of a bull. Akin to this was the straight trumpet used by the army, a wooden instrument sometimes overlaid with gold which was built up from several parts bound together. The oldest examples are votive miniatures in gold found at Tepe Hissar and at Astarabad and dated to the seventeenth century BC; three hundred years later Egypt is receiving such trumpets from Dushratta, king of Mitanni; so that a Caucasian rather than a Mesopotamian origin is suggested for the instrument.

*Stringed Instruments*

*Harps.* The harp is one of the oldest and most characteristic of Mesopotamian musical instruments, so much so that its invention was ascribed directly to the great god Enlil; and the description given of that mythological original corresponds very closely to the actual examples preserved to us. There are two main types, the bow-shaped (which is the more primitive) and a more or less rectangular type which was never very large and could be played either in an upright or in a horizontal position; it is this latter form that is the ancestor of the modern harp.

A small bow-shaped harp is represented on a vase-relief from Bismya of the fourth millennium BC and on a rather later relief from Khafaje; an actual third millennium example comes from Ur, a large standing instrument (it is 3 feet long by 3 feet 6 inches high) with a deep and wide sound-box decorated, as was the harp of Enlil, with the head of a calf in gold; it had eleven strings which passed over metal guides and were twisted round the upright arm to be tightened or loosened by hand; the number of strings varies in different instruments from 4, 5, 7 to 11, and up to 21, giving three series of seven diatonic notes to the scale; this last, which we see in the Elamite 'orchestra', may be an Assyrian development and occurs at a late date in Egypt. The instrument used by the Elamite orchestra is the upright harp, in which the strings are set more vertically than in the bow harp, where they form a triangle with the sound-box and the arm; it was played with the fingers, whereas for the bow harp the Sumerians had used a long plectrum.

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*Lyres.* These popular instruments were made in many sizes and with a good deal of variety in ornament if not in shape. The lyre is distinguished from the harp by having two uprights with a cross-bar between them, and the strings, attached to the cross-bar, instead of passing down into the sound-box are stretched over a bridge placed on the side of the sound-box and are tuned by short rods set on the cross-bar; these were for fine tuning, the twisting of the rod altering the tension of the string. The number of the strings varies from 4 or 5 (these are pictured representations and not necessarily true to life) to 7, 8 and 11 on actual examples, the last being apparently the most favoured number.

Where we have illustrations of lyres being played on what seems to be civil or domestic occasions the instruments are mostly small and are simply fashioned. The big lyres found in the tombs of the Early Dynastic period at Ur correspond to those described in various texts as dedicated to or used in the service of the temples in that they are adorned with animal heads in copper, silver or gold; in some cases the sounding-box is a schematized rendering of the animal's body; in one the animal, a stag, is shown standing in a boat and merely supports one of the uprights. In the dedication-texts the animal connected with the lyre is normally the bull, and stress is laid on the fact that the sound of the lyre is like the bellowing of the bull. If that association of form and sound generally held good, it is interesting to remark that in one royal burial at Ur there were in the death-pit three lyres which had clearly all been played at the same time (the fingers of the players were on the strings) and which represent three different animals, the bull, the heifer and the stag, so that they may well have been instruments of different tones.[2] The lyre was especially favoured as the accompaniment to the human voice. On the 'Standard of Ur' a musician with a bull-shaped lyre is shown accompanying a woman soloist at the solemn banquet celebrating the Sumerian victory; in a hymn to Ishtar of about 2100 BC it is written, 'I will speak to thee with the lyre [*AL-GAR*] whose sound is sweet'. The Minoans used a lyre made of ibex horns.

*Lutes.* The lute, with its small (generally circular) sounding-box and long neck on which the strings can be 'stopped' by the fingers, is almost certainly a northern instrument. It may have originated in the Caucasus area or beyond that, in Russian Asia in the neighbourhood of the Caspian Sea; in Mesopotamia there is no early reference to it, and the earliest examples date from the Kassite period. In the course of the second millennium it becomes fairly common there and soon reaches Egypt also; but the fact that it does not seem to have been used in Mesopotamian temple ritual even in Assyrian times would tend to show that it was a foreign instrument introduced only at a late date.

It is indeed tantalizing to know the character of so many different instruments and yet to be unable to deduce from them any certain conclusions about

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the music itself. It must be remembered, however, that only too often the information even as regards the instruments is indecisive, e.g. in the case of reliefs, etc., the number of strings shown may have no relation to the facts; that the stringed instruments could be tuned to any progression; that the wind instruments are not in a condition to be played and reproductions of them are unreliable, seeing that so much depends upon the strength and thickness of the reeds: even in the case of the pipes found at Ur different authorities arrive at totally different results. However interesting it may be to try to trace back the nature of the music played from the synagogue chants of the Jews through late Babylonian to Sumerian, such deduction is too problematic to find a place in the history of early music.

The actual structure of the Egyptian instruments seems to show—what indeed our knowledge of their mathematics would lead us to expect—that the Egyptians never of themselves advanced beyond the arithmetical progression of the equipartition system. It was the Mesopotamians, with their better mathematical understanding, who decided on a geometric progression whereby in music the distances of stopping are increased proportionally. Having observed that stopping at $\frac{1}{2}$, $\frac{1}{3}$ and $\frac{1}{4}$ of the entire length resulted respectively in the three principal intervals they logically went a step farther and accepted the stopping at $\frac{1}{5}$ as producing the major third and that at $\frac{1}{6}$ as producing the minor third. It was the divisive principle, which would not have occurred to the Egyptians.

Another point showing Egyptian backwardness in music seems well established. In early times the variety of instruments illustrated is very small. There are plenty of scenes carved or painted on tomb walls in which music is prominent; we see players on the little kettle-drum, on the sistrum (the stirrup-shaped type is more common than the spur-shaped Babylonian type), on the vertical flute, on the upright harp and with castanets; it is a very simple assortment. It is doubtful whether there was any instrumental music as such; it was essentially an accompaniment, even were it only to hand-clapping—*hsi*, the Egyptian word for 'sing', has as its determinative the hand sign, and that sign may be used by itself as an abbreviation for *hsi*. In nearly every picture the instrumentalist is seen accompanying singers or playing for dancers (and the dancing might be accompanied by song), and the scenes are almost invariably secular, showing the entertainment of the nobleman in his own house. Music for the early Egyptian was pre-eminently a social art, and it made use of the limited range of instruments which were either native to the Nile valley or had been introduced to it in the remote past and had become traditional.

This age-long tradition was broken when, in the Eighteenth Dynasty, the Syrian campaigns of the Pharaohs acquainted the Egyptians with the far more developed and complex art of the Asiatic musician. They had, indeed, learnt a little by more casual contacts at an earlier date; thus in a Twelfth Dynasty tomb at Beni Hassan there is a picture of a lyre, but it is an alien instrument

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carried by Semites from Syria; the Eighteenth Dynasty saw an artistic revolution. The tomb of Nekht, fifteenth century BC, gives the first Egyptian representation of a finger-board, and it was in that century that 'stopped' instruments were introduced; the old flute was replaced by the shriller pipes, the standing harp became larger and had a greater number of strings, and several new types of harp came into fashion; lyres and lutes of the long-necked Kassite sort make their appearance, together with Asiatic types of drums. As Professor Sachs says, 'A new kind of noisy, stimulating music seems to have taken possession of the Egyptians', and we may perhaps recognize an anticipation of modern experience when the Nile dweller, who had despised the Asiatic as a barbarian and a creature of a lower order, suddenly succumbed to the exciting polyphony of the barbarian's orchestra. Just as in the other arts we have seen throughout the Middle East at this time a mutual interchange of ideas which went far towards establishing if not a Middle Eastern civilization at least a common understanding and appreciation of civilization in general, so too in the province of music there was an internationalization which meant that the same instruments if not the same harmonies were everywhere in use.

## LITERATURE

In our last chapter the fine arts were treated upon a regional basis and the attempt was made to trace in each country the historical development of the arts. In the case of literature this method would be unprofitable and to a large extent impossible. It would be unprofitable because in none of the countries concerned does the material preserved to us cover the whole field; the type of literature most characteristic of one people may be entirely lacking from the repertory of its neighbour, so that the literary achievement of the ancient world can be assessed only by disregarding frontiers and dealing with categories in whichsoever country they may occur. It would be impossible for the simple reason that there is no evidence to guide us. Much of what is known about Sumerian literature comes from the Assyrian versions found in Assurbanipal's library at Nineveh, much comes from versions of the Kassite period found at Nippur; but recent discoveries prove that the best works go back two thousand years before Assurbanipal's time, and that with little or no variation, while of none of them can it be said that it is necessarily a later composition. Meissner summed up the matter when he wrote: 'Owing to its anonymous nature and its relatively small variation it is impossible to write a history of Babylonian-Assyrian literature connected with names of authors and displaying its development period by period. We must for the time being be content to occupy ourselves with the various categories of its literary output group by group, and to examine them from the point of view of form and content.'[3] Weber was even more emphatic: 'We are thus, in fact, faced with the phenomenon that in Babylonian literature there is, broadly

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speaking, neither archaic nor modern, nor any transition stages leading from one to the other; the period of nearly 3,000 years through which the monuments carry us shows in all essentials an unvarying picture of intellectual life.'[4] Similarly in the case of Egypt the date of an actual text is no criterion for the age of its contents. Down to the close of Egyptian history the exercises set for schoolboys were drawn from the ancient classics, and, be it noted, only from the ancient classics, never from contemporary or recent literature. Quite a number of Egyptian works are known to us only from late copies, but more and more does the evidence tend to demonstrate that the originals are to be assigned at least to the Twelfth Dynasty and perhaps to the period between the Sixth and the Fourth Dynasties; it is possible that that period, 2800 to 2200 BC, was the greatest in Egyptian literature; and it is certain that in the Middle Kingdom, beginning in 2000 BC, most of the literary forms had reached their highest development. After that date, early though it was in Egyptian history, literary invention appears to have been nearly exhausted. A few hymns of the Eighteenth and Nineteenth Dynasties—such as the Akhenaton hymns—do attain a really high level of poetry, but even those are modelled on, and owe not a little of their quality to, older poems; in the story of Wenamon, which dates to the eleventh century BC, we have an excellent composition, but it stands alone; for the most part the late works, in so far as they are not mere copies, are but literary exercises whose aim is only to give some new stylistic turn to a familiar original.

Until more evidence is forthcoming we must accept the surprising conclusion that, so far as our period is concerned, the fountain of inspiration in Mesopotamia and in Egypt alike virtually dried up about eighteen hundred years before Christ.[5] In neither case can the earlier literary development be traced in detail. Since in both countries the ancient classics were treasured as the staple literature of all succeeding periods we can best treat them not as the products of any one particular dynasty or century but as the literary possessions of Egypt and Mesopotamia during the Bronze Age.

Any attempt to assess the artistic value of that literature on the grounds of its form and content is from the outset beset with difficulties. In the first place, the amount of material upon which judgement can be based is small.[6] In Part II, Chapter VI, it was shown that writing was invented to meet the practical demands of business and, in a secondary degree, of religion, not at all as a medium for literature; so it is that of the vast stores of ancient documents preserved to us, written on stone, on clay or on papyrus, most are business records, letters, dedications, omens, funerary inscriptions, religious formulae, and only a very small percentage can be classed as literature, even though that term be used in its widest connotation. Considering that we have to do with a number of important civilizations over a space of nearly two millennia the material is indeed scanty.

Secondly, there is the difficulty of language. Only too often the texts are fragmentary, and the key word to the sentence may be missing; we cannot be

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sure that the gloss introduced by the modern scholar is necessarily correct or gives the meaning intended by the author. But even when the text is complete translation may be largely guess-work; it is true that the ordinary temple- or grave-inscriptions, or the trade documents, can be read quite accurately—they are stereotyped formulae of the simplest sort; but it is quite another matter where poetical or imaginative writing is concerned, for then the vocabulary employed is entirely different, words commonly occur for which there is no parallel and therefore no explanation, and familiar words may be used with alternative or metaphorical values. The result is that we may find two translations by modern scholars of the same ancient text in which not only is the expression varied but the entire subject and meaning are different. If then, owing to linguistic problems, we are occasionally in doubt as to the content of a 'literary' document, the likelihood of our recovering anything of its form and style is small indeed. Generally we can, from the sense, assign the document to its proper category as hymn or secular poem, myth or romance, proverb or aphorism from a 'book of wisdom', but it is extremely difficult to judge the extent to which the subject is treated in what we should call a literary manner and so to assess the value of the writing as a work of art.

This is, of course, a difficulty inherent in all translation from one language to another. A literal rendering of the original words will result in a caricature in which all the beauty of language is lost and all the undertones of meaning are missed, and it needs a profound knowledge of both languages to recreate in the idiom of one not only the sense but something corresponding to the artistic form expressed in the idiom of the other. But that familiarity cannot be acquired in the case of languages which have been in disuse for two thousand years and were those of peoples whose methods of thought and modes of expression, unknown to us directly and probably very different from our own, can be surmised only from those very documents, few in number, whose translation is in question. The scholar, aware of the pitfalls, naturally tends towards a strictly literal rendering; but in so far as he departs from this it is his own personal taste and not necessarily that of the author that is reflected in his version. Even the form of the original text may be doubtful. If only because poetry is more easy to memorize than prose a great deal of the literature of any people for whom writing is either unknown or known only to an educated minority is likely to be in verse, and this is certaintly true of the ancient Middle East. But it is not always easy for the modern scholar to decide whether a Sumerian or Egyptian text is in poetry or prose. On an Egyptian papyrus the ends of lines may be marked by red dots, in which case no difficulty arises; but where the scribe has omitted the dots the identification of a text as poetry may be hazardous. None of the Middle Eastern languages made use of rhyme. The normal characteristic of a poem is its strophic arrangement, i.e. the division of the text into couplets in which there is generally a parallelism of form or of thought, the second member either

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carrying on and expanding the sense of the first or standing in exact antithesis to it. This type of versification is familiar enough to us because it is that of the Hebrew writers of the Old Testament; and because Hebrew is not a dead language in the sense that Egyptian and Sumerian or Babylonian are dead, but has been handed down by an uninterrupted tradition, the translators of the Old Testament were able to produce an English version in which rhythm and metre are used with an effect similar to that of the original. Influenced by the partial parallel the translator of an Egyptian poem almost inevitably attempts to justify the strophic couplet (which is often, though not always, recognizable) by the introduction either of metre or, at any rate, of rhythm, that being an artistic form in his own idiom. But a scholar as acute as the late Professor Peet has put in the *caveat* that 'our ignorance of Egyptian vocalization and accentuation forbids us to say that there was any metrical parallel in the original couplet; and it may be that for the ancient Egyptian the artistic value of his poem depended on some quality which escapes us altogether'. In fact, the analogy with Hebrew must not be pushed too far. The parallelism (or antithesis) within the strophe is less uniformly binding in Egyptian than in Hebrew, and although both languages employ the strophe, that does not imply anything further; moreover, in an Egyptian hymn the same line may be repeated several times, but where one line has the simple name of a god it may, when repeated, be lengthened by the addition of epithets which would completely destroy the metre if metre existed and were at all strict. We must therefore reconcile ourselves to the fact that whereas the sentiment or the imagination expressed in an Egyptian poem should be duly credited to its author, much of the phraseology and any charm of rhythm or metre must be attributed to the translator.

The form of Mesopotamian lyric poetry is less dubious. The text is divided into lines (each of which again may be separated into two half-lines); each line contains a more or less fixed number of stress accents and is a complete sentence; the lines are grouped into strophes consisting generally of two pairs of lines or into half-strophes consisting of only one pair; each strophe is a complete unit of thought. On the other hand it is more difficult to appreciate the content. All the lyrics are religious, and a few of them are extremely fine, rivalling the noblest of the Egyptian hymns and of the Hebrew psalms, but the majority are dull and almost unintelligible. This is because they are liturgical, hymns sung in 'the elaborate daily services of the most formal and musically intricate religion of antiquity'[7] or mythological legends meant to accompany the ritual of special festivals; they are therefore not independent works of art but only one of several elements composing a work of art in which an equal and perhaps a major part was played by music and drama; and lacking such accompaniment they cannot fairly be judged on their own merits. Were we asked to decide on the artistic value of Wagner's *Ring* on the basis of the libretto alone, and that printed as a continuous text with nothing to show that different parts are spoken by different characters, and with no

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stage directions, we should refuse to attempt anything so impossible; but the Sumerian hymns confront us with just this problem. If, in the pages which follow, anything is said about the form and style of Mesopotamian or Egyptian verse, the reader should bear in mind all these disabilities which qualify our judgement.

Perhaps the best of the Babylonian hymns (and we are concerned with the best only) is that in honour of Shamash the Sun god:

The mighty hills are surrounded by thy glory,
  The flat lands are filled with thy brightness.
Thou hast power over the mountains and lookest over the earth;
  Thou dost hang up the hems of the land in the innermost part of heaven.
The men of the lands, thou watchest over them all;
  Thou dost watch over all that King Ea the Adviser hath created.
Thou givest pasture to all living creatures,
  Yea, thou art the shepherd of all that is above and beneath.

. . . .

Men's designs in the speech of all lands
  Thou knowest, and observest their goings.
The whole of mankind looketh up to thee.
  O Shamash, the universe longeth for thy light.
Thou destroyest the horn of him who deviseth evil;
  Thou overturnest the place of him who planneth oppression.
Thou causest the unjust judge to see confinement,
  And punishest the corrupt and evil leader.
But he that is incorruptible and maketh intercession for the weak
  Is well pleasing to Shamash, and his days are lengthened.
The conscientious judge that giveth just judgement
  Prepareth for himself a palace; his habitation is a dwelling of princes.
He that oppresseth the dependant is marked down with the pen:
  They that do evil, their seed shall not abide.
They whose mouth is full of lies, thus dost thou unto them,
  Thou burnest and dissolvest the words of their mouth.
Thou hearest the oppressed as thou passest over them and searchest
    out their rights;
  Each and all are in thy hand.
Thou guidest their oracles, thou freest what was bound;
  Thou hearkenest, O Shamash, to prayer, to entreaty and praise,
Prostration, kneeling, whispered prayer and bowings-down.
  From the depth of his throat the wretched crieth to thee;
The failing, the feeble, the tormented, the poor,
  Cometh ever to thee with song of woe or petition. . . .
Them that kneel to thee thou absolvest and makest clean:
  Thou acceptest the praise of them that praise thee.
But they fear thee and revere thy name,
  Men bow them down ever before thy greatness.

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Them that are foolish of tongue and speak that which is ungodly,
That which hath neither front nor back, like clouds
That pass over the face of the wide earth
And rest upon the high mountains,
The god Lakhmu shall overwhelm them, even the lord of terror.
The harvest of the sea, all that cometh out of the deep,
The tribute which the stream payeth, O Shamash, lieth before thee.
What mountains are not covered by thy gleam?
What places are not warmed by the beams of thy light?

The tablets upon which the cuneiform text is written are sadly damaged so that its reconstruction and translation were difficult and in places uncertain; but through the rather pedestrian rendering quoted above there can be seen a really fine poem, rich in imagery—the comparison of foolish and godless speech to clouds is beautifully done and for its loftiness of thought not inferior to the Hebrew psalms. Certainly the Mesopotamian poet, here at his best, is the equal of the Egyptian. The Hymn to the Nile, which is at least as old as the Hyksos period, is relatively unimaginative and naïve:

Praise to thee, O Nile, that issuest forth from the earth and comest to nourish Egypt;
Of hidden nature, a darkness in the daytime;
That waterest the meadows, which Rê hath created to nourish all cattle;
That givest drink to the desert places which are far from water, it is his dew that falleth from heaven;
Beloved of the Earth god, director of the Corn god, that maketh to flourish every workshop of Ptah;
Lord of fish, that maketh the water-fowl to go upstream. . . .
That maketh barley and createth wheat, so that he may cause the temples to keep festivals;
If he is sluggish, the nostrils are stopped up and all men are brought low;
The victuals of the gods are diminished and millions of men perish.

It is the New Kingdom that gives us the finest of the hymns to the gods. Akhenaton's Hymn to the Sun, although it borrows somewhat from the older Hymn to Amon-Rê, breaks altogether with the tradition which insisted on the dreary enumeration of titles and attributes as necessary to the praise of the deities; it is a spontaneous outpouring of gratitude for the beauty of the world, and while it has nothing corresponding to the spiritual profundity of the Babylonian hymn it possesses a light-hearted charm which the other cannot rival.

Thy dawning is beautiful in the horizon of heaven
O living Aton, Beginning of life!
When thou arisest in the eastern horizon of heaven
Thou fillest every land with thy beauty;
For thou art beautiful, great, glittering, high over the earth;
Thy rays, they encompass the lands, even all thou hast made.

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Thou art Rê, and thou hast carried them all away captive;
  Thou bindest them by thy love.
Though thou art afar off, thy rays are on earth;
  Though thou art on high, thy footprints are the day.
When thou settest in the western horizon of heaven
  The world is in darkness like the dead.
They sleep in their chambers,
  Their heads are wrapt up,
Their nostrils stopped, and none seeth the other;
Stolen are all the things that were under their heads,
  While they know it not.
Every lion cometh forth from his den,
  All serpents, they sting.
Darkness reigns [?], the world is in silence,
  He that made them has gone to rest in his horizon.
Bright is the earth
  When thou risest in the horizon,
  When thou shinest as Aton by day.
The darkness is banished
  When thou sendest forth thy rays;
The Two Lands are in daily festivity,
  Awake and standing upon their feet,
  For thou hast raised them up.
Their limbs bathed, they take their clothing;
  Their arms uplifted in adoration to thy dawning,
Then, in all the world, they do their work.
All cattle rest upon their herbage,
  All trees and plants flourish;
The birds flutter in their marshes,
  Their wings uplifted in adoration to thee.
All their sheep dance upon their feet,
  All winged things fly;
They live, when thou hast shone upon them.
  The barques sail upstream and downstream alike,
    Every highway is open because thou hast dawned.
  The fish in the river leap up before thee,
    And thy rays are in the midst of the great sea.
Thou art he who createst the man-child in woman,
  Who makest seed in man,
Who givest life to the son in the body of his mother,
  Who soothest him that he may not weep,
  A nurse even in the womb;
Who givest breath to animate every one that he maketh:
  When he cometh forth from the body
  . . . on the day of his birth,
Thou openest his mouth in speech,
  Thou suppliest his necessities.
    When the chicklet crieth in the egg-shell

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Thou givest him breath therein, to preserve him alive.
When thou hast perfected him
That he may pierce the egg,
He cometh forth from the egg
To chirp with all his might;
He runneth about upon his two feet
When he hath come forth therefrom.
How manifold are all thy works!
They are hidden from before us,
O thou sole god, whose powers no other possesseth.[8]

The unmistakable resemblance to the Hebrew Psalm civ does not in itself concern us here because of the latter's late date; but it is worth noting that the literary form which is common to the poetry of both countries (and also to that of Sumer) is not necessarily, in the case of the Hebrews, derivative. The strophe with its parallel or antithetic balance of thought goes back with them to very early times, as can be seen from fragments of songs, incorporated in the text of the Old Testament, but taken over by the compilers of the books from oral tradition; such is the song of the desert wanderings:

Spring up, O Well,
Sing ye unto it!
The princes digged the well,
The nobles of the people digged it,
By the direction of the Lawgiver,
With their staves.

or the far older song of the 'antediluvian' Lamech

Hear my voice, ye wives of Lamech,
Hearken unto my speech;
For I have slain a man for my wounding,
A young man for my hurt.

The Ras Shamra tablets show that a similar form was used for Phoenician poetry; it was indeed the common property of the Middle Eastern peoples, and the use of it by any one of them does not imply any lack of originality. It was not the only form employed, but it is the one that can be most easily recognized as verse; in some other cases, the repetition of a 'burden' or (in Egypt) such a trick as the starting of every line with the same word implies a verse form, but the rhythm or metre escapes us.

There is no doubt that the beauty of thought and imagery which is apparent to us even in a translation of such work as the Aton hymn was, for the ancient Egyptian, matched with a beauty of language which literal translation cannot recapture. The Egyptian poet was a conscious stylist. Khakheperre-Snb, in the Twelfth Dynasty, begins his 'Complaint' with a frank statement of his aim: 'Would that I had words that are unknown, utterances and sayings in new language that hath not yet passed away, and without that which hath

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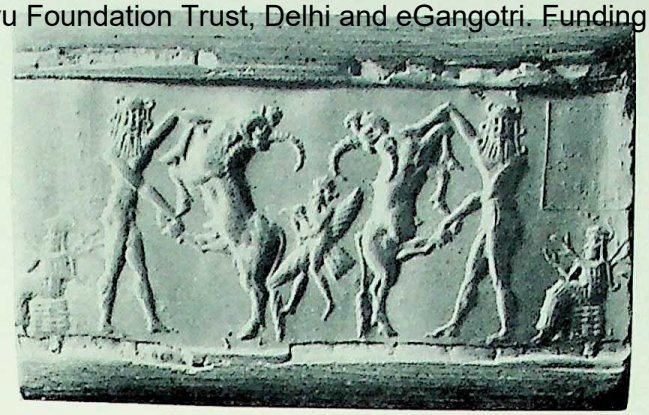

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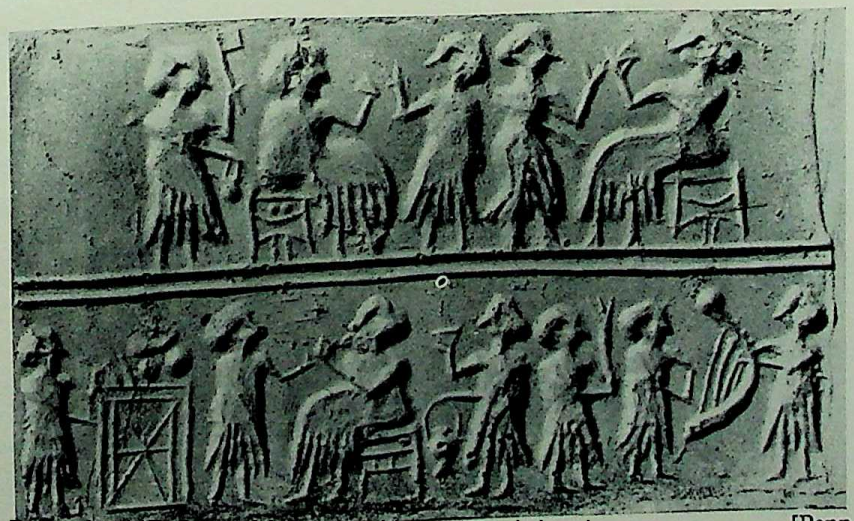

[Penn

41 *Early Dynastic and Sargonid cylinder seals' impressions*

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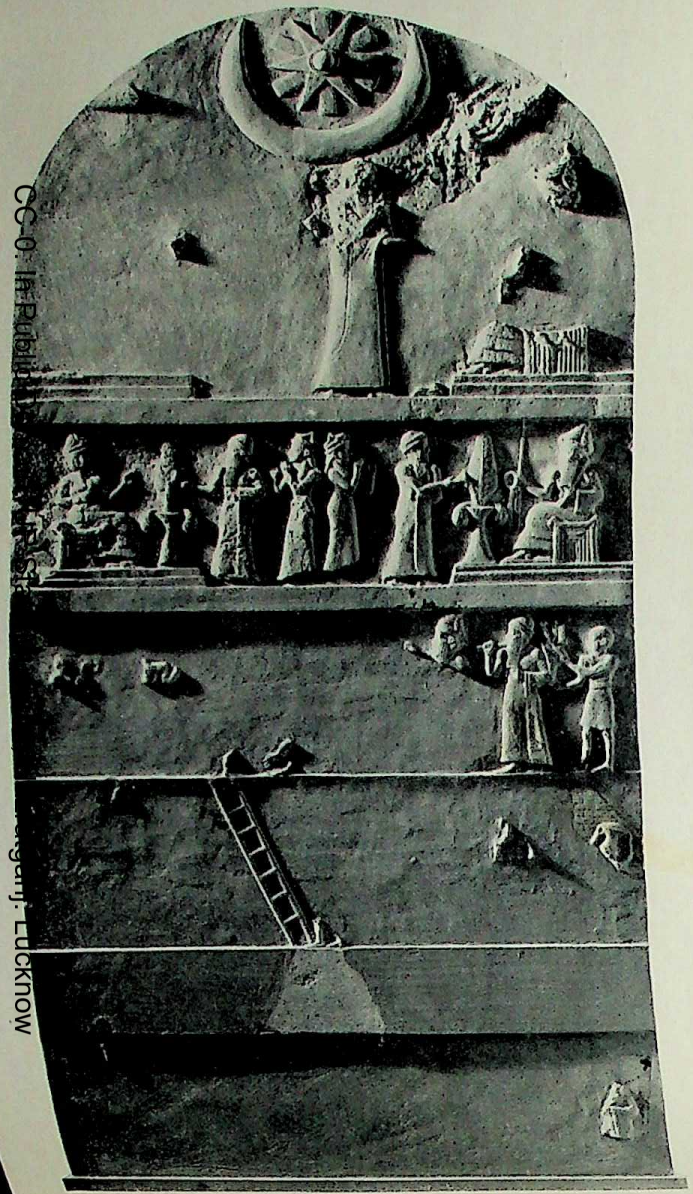
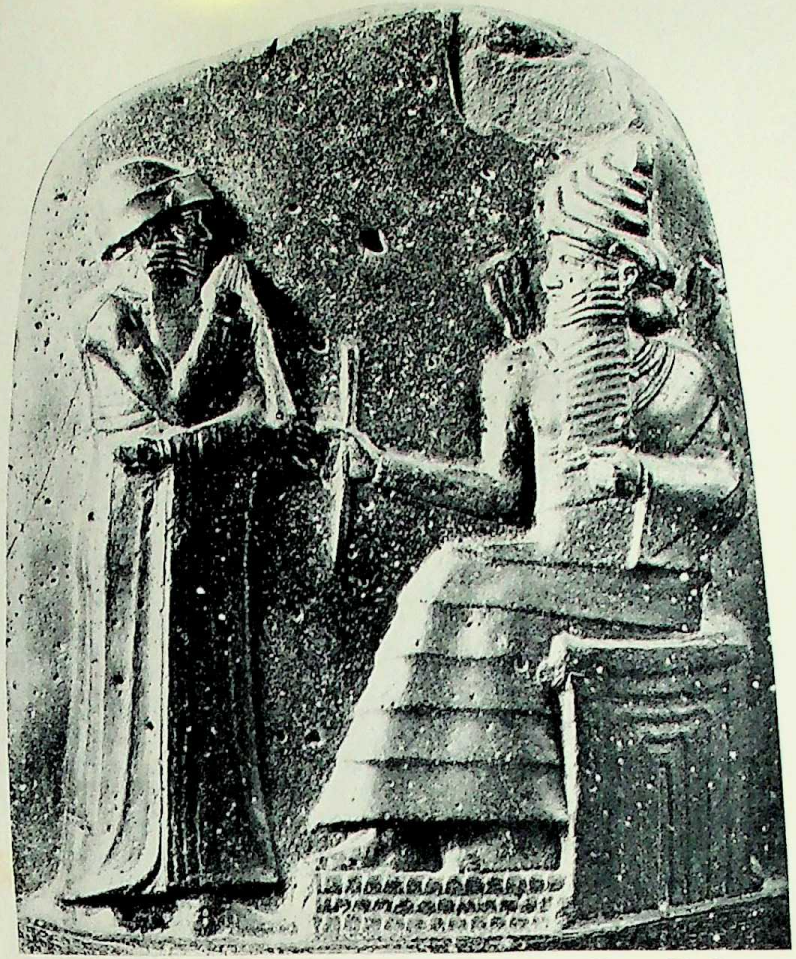


(a) Penn]



(b) [*photo Chuzeville*, Louvre

(c) [V.M.

42 (a) *Ur-Nammu stele*

(b) *The heading of Hammurabi's Code*

(c) *Warka vase*

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(a) Penn]

42 (a) *Ur-Nammu stele*

(b) *The heading of Hammurabi's Code*

(c) *Warka vase*

(c) [V.M.

43 *Tell Asmar: group of figures*

[O.I.

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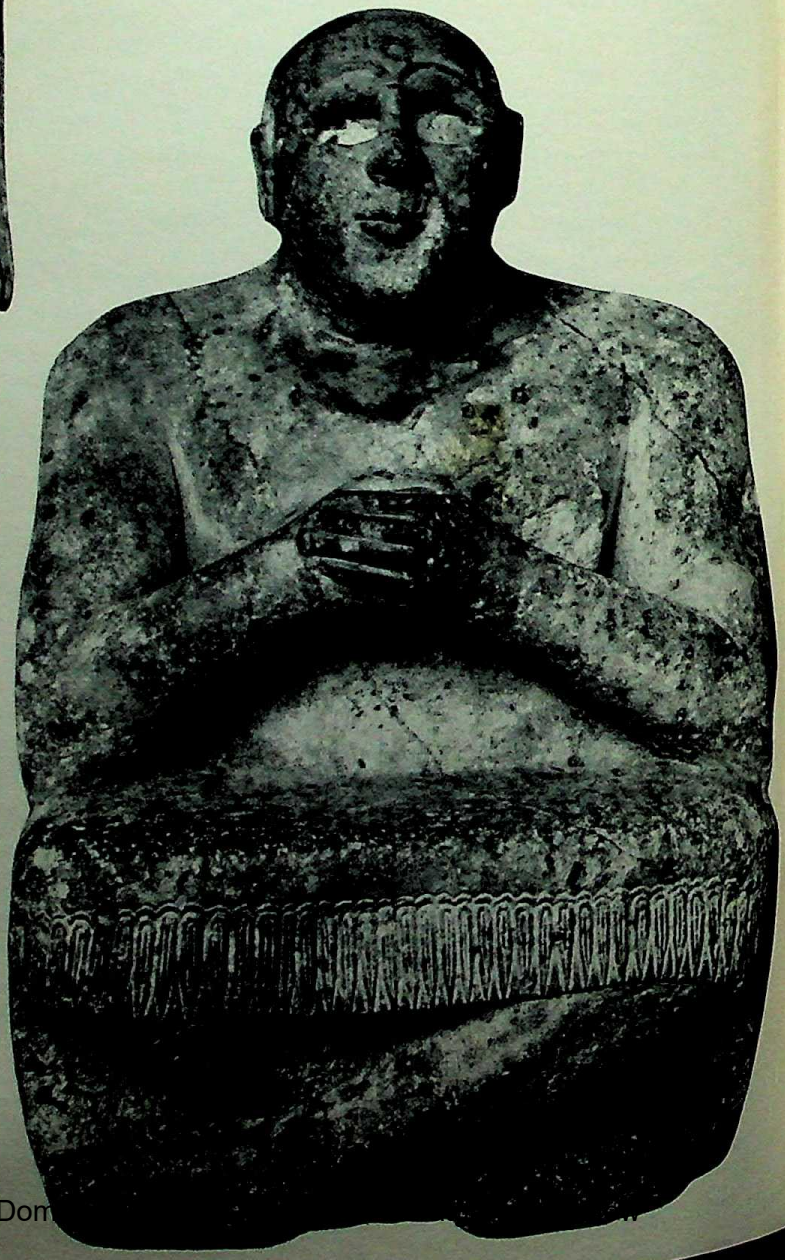
(a) B.M.]



(b) [Carlsberg]

44

(a) *British Museum figure*

(b) *Statue of a man*

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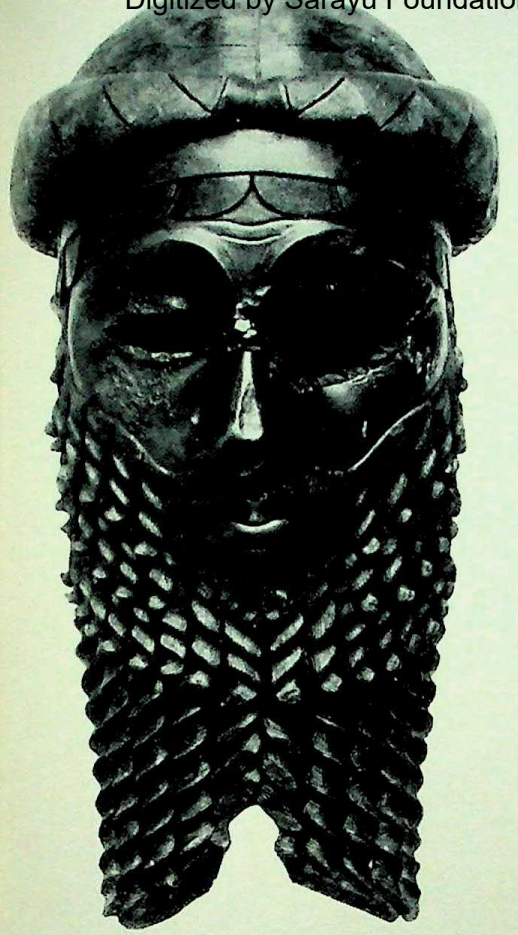

(a) I.D.A.]

(b) [*photo Chuzeville*, Louvre

(c) [D.A.M.S.

45

(a) *Presumed head of Sargon*

(b) *Presumed head of Hammurabi*

(c) *The Mari 'Chorister'*

Main. UP State Museum, Hazratganj.

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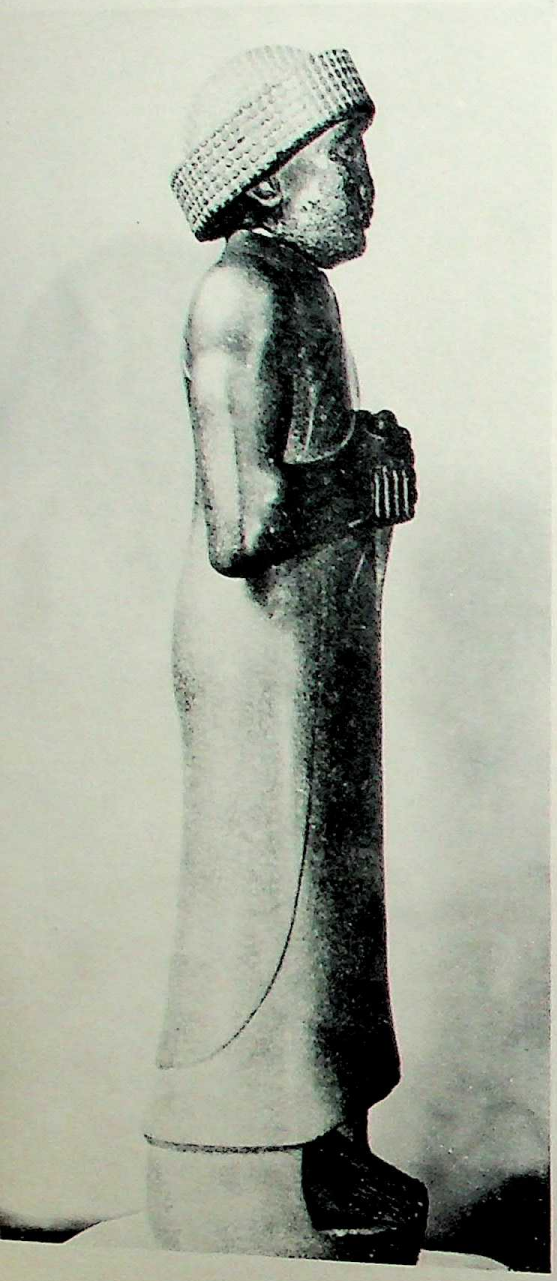

[*photo Chuzeville*, Louvre

46 *Statue of Gudea*

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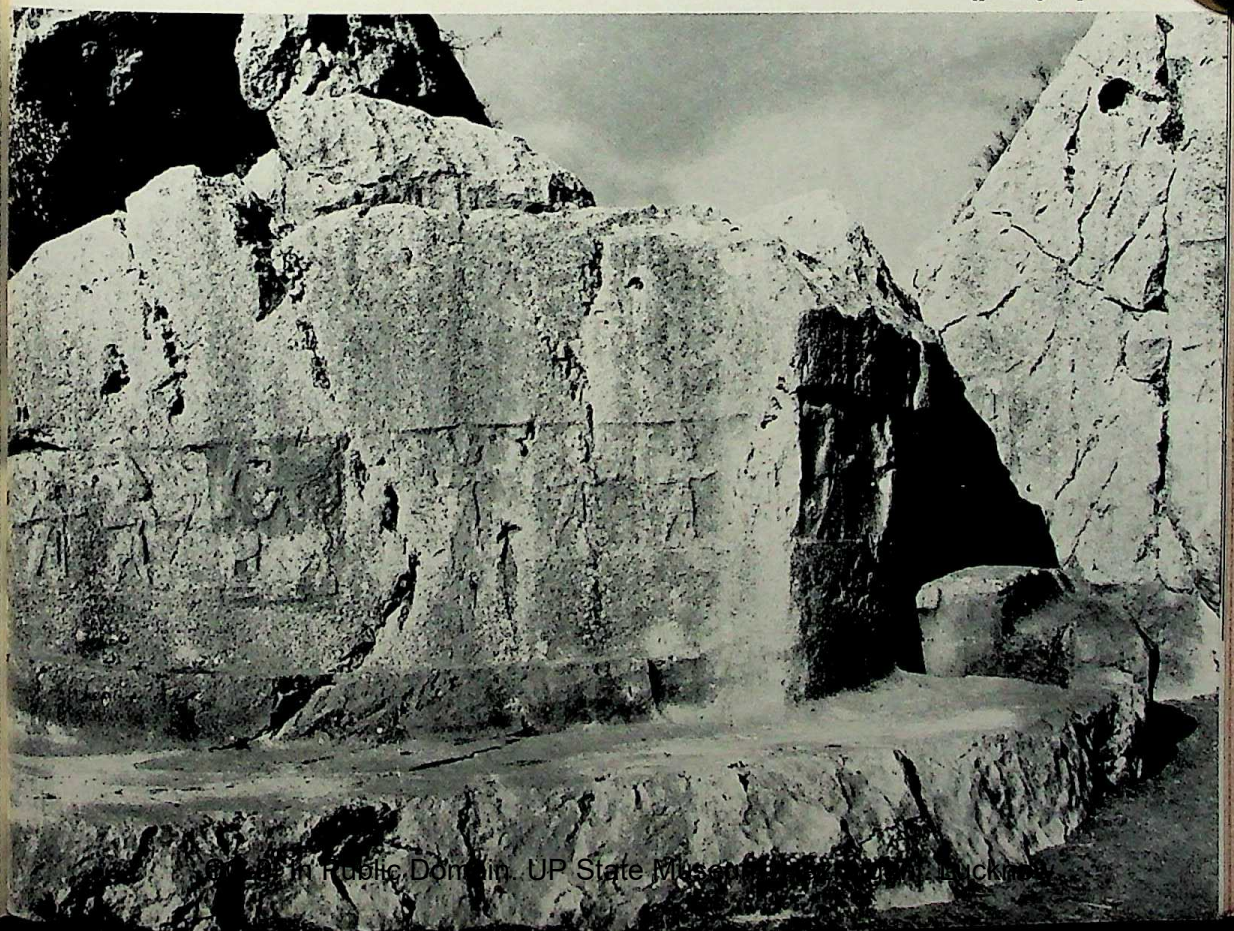
(a) *photo Josephine Powell*]

47

(a) *Boğazköy: the King's Gate figure*

(b) *Yazilikaya reliefs*

(b) [*photo Josephine Powell*]



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[D.A.I.

50 *Mohenjo-daro seals*

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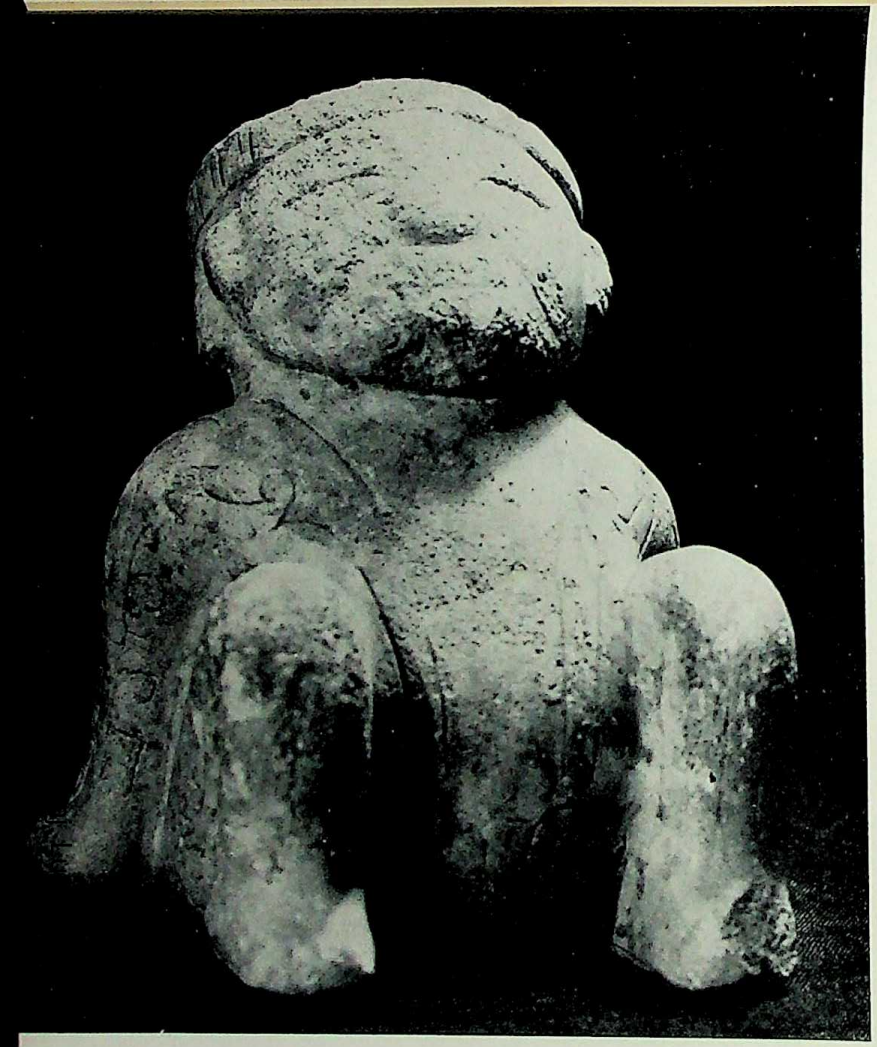

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51 *Marble statue of Yin Shang*

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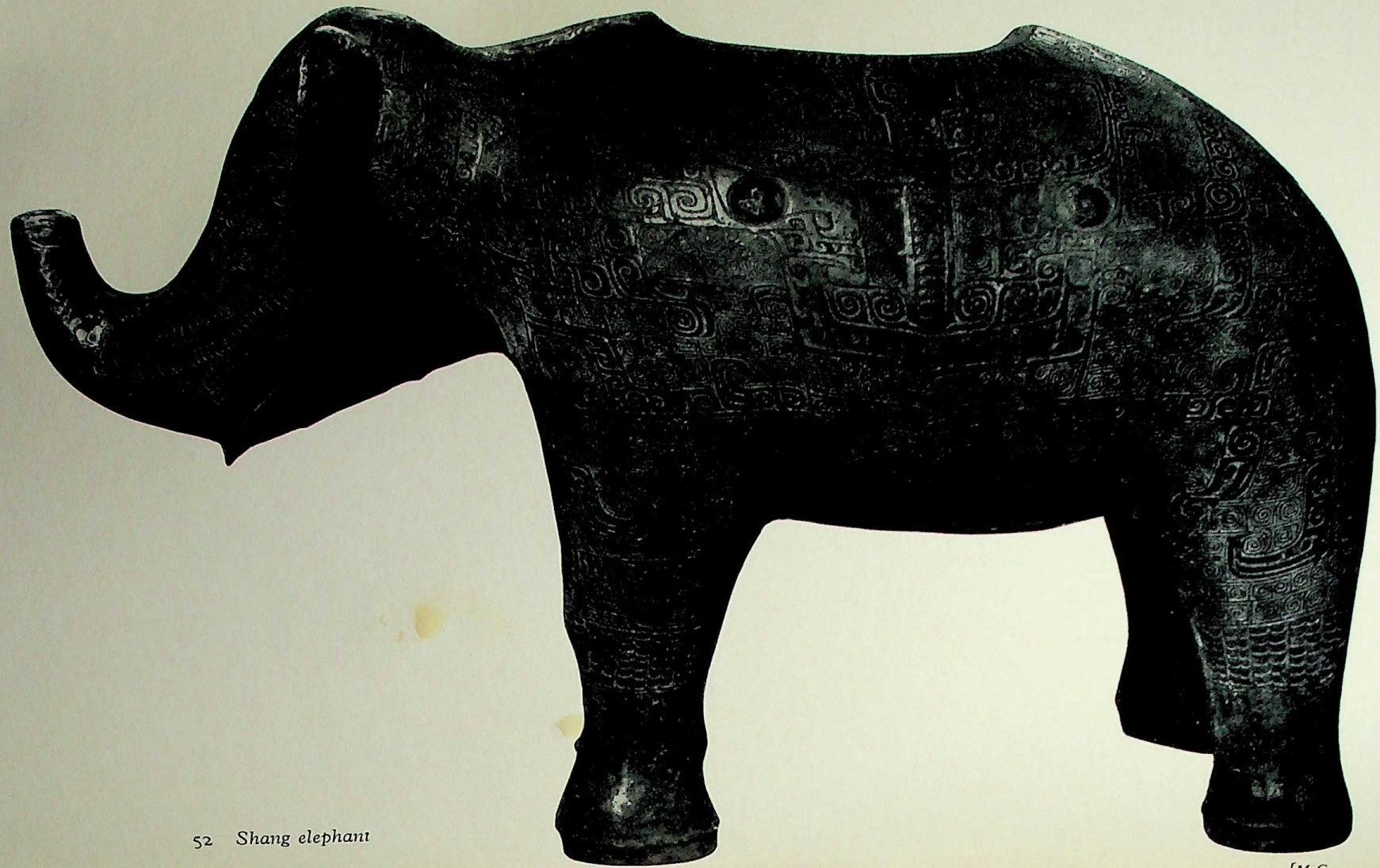

52 *Shang elephant* [M.G.

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[M.G.

52 *Shang elephant*

[photo Josephine Powell

53 *Cretan Snake Goddess*

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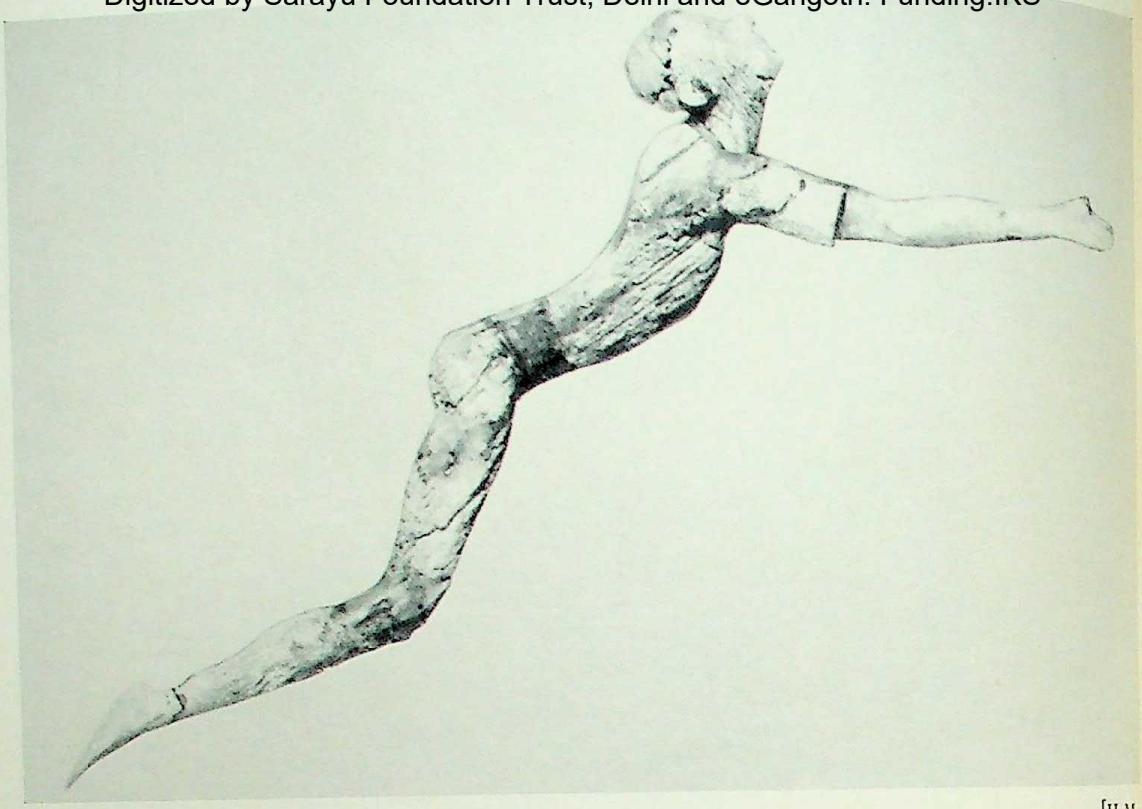

(a) [H.M.

54 (a) *Cretan ivory youth*

(b) *Crete: Minoan bull with baiter*, circa 1600 B.C.

(b) [Spencer-Churchill

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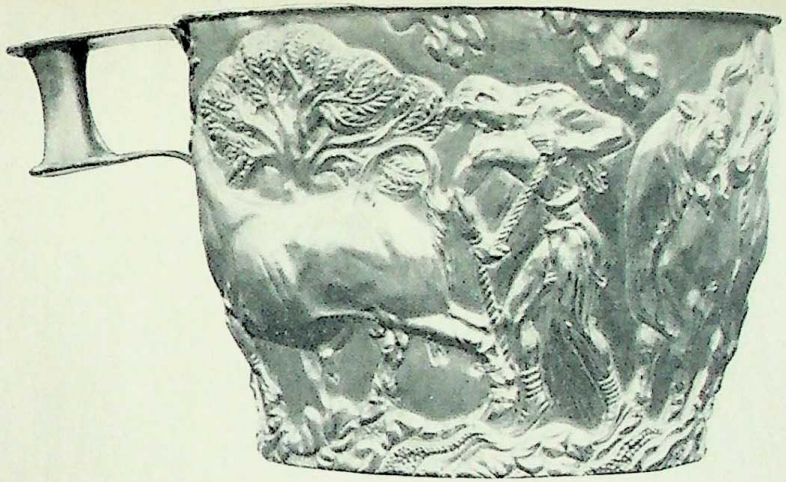
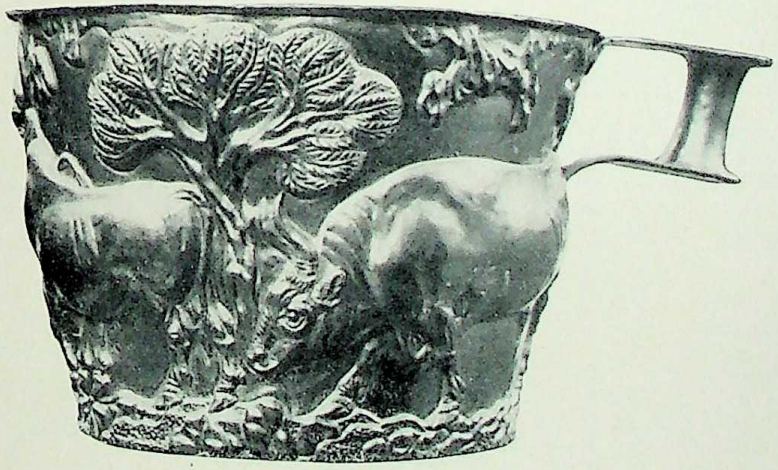


55 *Vaphio gold cups*



[N.M.

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[Schaeffer

56 *Ugarit: gold bowl*

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been said repeatedly—not an utterance that hath grown stale, what the ancestors have already said.' The Proverbs of Ptahhotep are entitled, 'The beautifully-expressed utterances spoken by the prince . . . Ptahhotep while instructing the ignorant in knowledge and in the rules of elegant discourse', and in the Prophecy of Neferti the Pharaoh calls for someone 'that will speak to me some beauteous words, choice speeches, in hearing which my majesty may find diversion'. Obviously, style was prized for its own sake. We do not find in Mesopotamia any explicit reference to such a purely literary quality, but that their style also was valued in literary composition can safely be assumed.

Akin to the hymns in praise of the gods, in so far as they also were employed in religious services (probably in anniversary celebrations of the events they commemorate) were the Sumerian hymns of lamentation over the downfall of cities. Owing to the vicissitudes of Sumerian political history there were few cities which had not at some time or another suffered destruction at the hands of an enemy, and such disasters were a regular theme for Sumerian poets. The collapse of the Third Dynasty of Ur and the capture of its king, Ibi-Sin, by the Elamites, is thus celebrated:

> When they overthrew, when order they destroyed,
> Then like a deluge they consumed all things together.
> Whereunto, O Sumer, did they change thee?
>
> The sacred dynasty from the temple they exiled,
> They demolished the city, they demolished the temple,
> They seized the rulership of the land.
>
> By the command of Enlil order was destroyed;
> By the spirit of Anu hastening over the land it was snatched away;
>
> Enlil turned his eyes towards a strange land,
> The divine Ibi-Sin was carried to Elam.

Even in the English version the expression here is markedly different from that of the Shamash hymn. The stark simplicity of the language, the short bitter sentences, are in keeping with the finality of Ur's ruin; here style is deliberately harmonized with subject. If, in the later part of the poem, the destruction of one temple after another is catalogued in identical terms, so that for us the effect is monotonous in the extreme, it must be remembered that for the citizen of Ur these names of temples, evoking his city's past history, were poignant symbols; each temple had its individual character and unique associations, and the contrast between that diversity and the dull sameness of the formula describing their common doom is, in its way, an artistic triumph.

There are a few comparable Egyptian pieces, belonging to (or referring to) the disastrous days of the First Intermediate Period (prior to the Middle



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Empire), which bewail the anarchy of the time and the upsetting of all that ordered existence which for the conservative Egyptian meant well-being:[9]

Behold, the poor of the land have become rich;
The possessor of property is now one who has nought.
Behold, servants have become masters of butlers;
He who was a messenger now sends another.
Behold, he that had not a loaf is the possessor of a granary;
His magazine is equipped with the goods of another.
Behold, noble ladies go hungry;
What was prepared for them now goes to sate the king's men.

So the sage Ipuwer; so too the scribe Neferti:

I show thee a land in lamentation and distress;
That which never happened before has happened.
Men shall take up weapons of war,
That the land may live in uproar.
Men shall fashion arrows of copper
That they may beg for bread with blood . . .
I show thee the son as foeman and the brother as adversary,
And a man murdereth his own father.

As literary compositions these may rank reasonably high, but they are artificial exercises. Juvenal's phrase, *facit indignatio versus*, 'indignation is the inspiration of the poet', would apply to the Sumerian Lamentation but scarcely to the work of such as Neferti and Ipuwer; these, writing after the event, have merely found, in a disaster known to them only by tradition, an apt subject for pessimistic verse. The Egyptian poet succeeded infinitely better where his pessimism is genuine. The finest example of this 'contemplative' poetry is the Twelfth Dynasty work now known as 'The Man weary of Life', written partly, it would seem, in prose but partly in verse. The first poem describes his sorry state:

Behold, my name stinks
More than the odour of carrion
On days in summer, when the sky is hot.

The second laments his solitude in an evil world:

To whom do I speak today?
Brothers are evil;
The friends of today love not.

To whom do I speak today?
Hearts are covetous;
Every man plundereth the goods of his fellow.

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and in the third poem he sings the praises of death:

Death is in my eyes today
As when a sick man becomes whole,
As when one walketh abroad after sickness.

Death is in my eyes today
Like the scent of myrrh;
As when one sitteth under the boat's sail on a windy day.

Death is in my eyes today
Like the smell of water-lilies;
As when one sitteth on the bank of drunkenness.[10]

Death is in my eyes today
Like a well-trodden road,
As when one returneth from the war unto his home.

Death is in my eyes today
Like the unveiling of heaven
As when one attaineth to that which he knew not.

Death is in my eyes today
As when one longeth to see his house again
After he hath spent many years in captivity.

There is a simplicity and a restraint in these verses which assuredly entitles them to a very high place in the poetry of the world. They are not the outburst of a man driven to desperation, nor of a pessimist, but are drawn from the real beliefs which the Egyptian might disguise but could not forget. It is true that the harper at the banquet might regularly invite the guests to eat, drink and be merry, 'for tomorrow we die'; in a New Kingdom version:

Spend the day merrily. Put unguent and fine oil together to thy nostrils, and garlands and lotus-flowers on the body of thy beloved whom thou favourest, as she sitteth beside thee. Set singing and music before thy face. Cast all evil behind thee and bethink thee of joy, until that day cometh when one reacheth port in the land that loveth silence.

but facing this in the Theban tomb we find another poem in which the dead man, rebuking the light song, attains a far higher level of poetry:

I have heard those songs that are in the ancient tombs, and what they tell extolling life on earth and belittling the region of the dead. Wherefore do they thus concerning the Land of Eternity, the just and fair, which has no terrors? Wrangling is its abhorrence, and no man there girds himself against his fellow. It is a land against which none can rebel; all our kinsfolk rest within it since the earliest day of time. The offspring of millions are come hither, every one. For none may tarry in the land of Egypt, none there is who has not passed yonder. The span of earthly things is as a dream; but a fair welcome is given to him who has reached the West.

The Egyptian poet, in short, is at his best where he can be most personal and

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where sincerity absolves him from the literary artifices which tickled the fancy of his Egyptian auditors but too often ruined his verse—the elaborate puns upon words, the stringing together of short songs each of which must begin and end with its actual number in the sequence, the tedious clichés borrowed from and perhaps intended to recall favourite old poems. Some of the New Kingdom love songs (they are few in number and for the most part sadly incomplete) are charming in spite of their artificiality:

Seven days from yesterday I have not seen my beloved,
And sickness hath crept over me
And I am become heavy in my limbs
And am unmindful of mine own body.
If the master-physicians come to me
My heart hath no comfort of their remedies,
And the magicians, no resource is in them;

. . . .

Better for me is my beloved than any remedies,
More important is she for me than the entire compendium of medicine
My salvation is when she enters from without
When I see her, then am I well;
Opens she her eyes, my limbs are young again,
Speaks she, and I am strong.
And when I embrace her, she banishes evil,
And it passes from me for seven days.

This cannot be claimed as poetry of the highest sort, but it is a very pleasant conceit and in the original must have sounded far better than in the translation; and even the repetition of 'seven days' at the beginning and end is no more artificial than what we have in a roundel or a triolet.

Outside Egypt the 'contemplative' or introspective type of poetry is comparatively rare. A people whose chief prayer was always for long life upon earth could not fail to be shocked by man's transient state, and at least one poem (the text, found in Assurbanipal's library, is late, but seems to be based on an earlier original) harps upon this very much in the manner of the Hebrew psalmist or of the earlier parts of the Book of Job:

He who in the evening was yet alive
in the morning was dead;
Suddenly was he cast down,
quickly was he brought to naught.
For the twinkling of an eye he sings and plays;
In a moment he howls as one voicing his wrongs.

Day and night men's moods change;
If they be hungry, then are they like corpses,
If they be filled, then they deem themselves equal with their god.
If things go well with them, they talk of mounting to Heaven,
If they be in trouble, they speak of going down into Hell.

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More characteristic, however, are the 'penitential psalms' of Mesopotamia and of Palestine, which are inspired not by pessimism but by the consciousness of sin and the hope of god's mercy:

> In the wrath of his heart the lord hath looked banefully on me,
> In the fierceness of his heart the god hath smitten me with his enmity;
> When I sought help none took me by the hand,
> When I cry aloud no man hearkens to me.
> I turn me to my merciful god, I cry aloud to him;
> I embrace and I kiss the feet of my goddess.
> O Lord, cast not thy bondman down;
> Seize him by the hand as he lies in the miry water.
> The sin that I have committed turn into good,
> Let the wind bear away my transgressions;
> Take from me like a garment the multitude of my iniquities;
> My god, though my sins be seven times seven; yet wash away my sins.

There is, indeed, little to choose between the best of the Babylonian and the Hebrew psalms, regarded purely as religious poetry, and the thought also can be curiously alike. When the Hebrew psalmist says:

> Who can tell how oft he offendeth?
> O cleanse thou me of my secret faults.

he seems to be echoing the words of the earlier Babylonian writer:

> The sin which I have done know I not,
> And I am not aware of my transgression.

The few Egyptian parallels belong to a time just outside the scope of this volume; found on the tombstone of quite humble people of the Nineteenth Dynasty, however, they are likely to be based upon earlier poems which have not been preserved in their original form but may well have rivalled in quality those of their neighbours:

> Though the servant was disposed to do evil
> Yet is the Lord disposed to be merciful.
> The Lord of Thebes spendeth not a whole day wroth;
> His wrath is as the passing of a moment and naught is left;
> His wind is turned to us again in mercy.

What we miss in Egyptian literature is the mythological epic which figures largely in that of Mesopotamia, as also of north Syria and of Phoenicia. The epic poem seems to have been the natural mode of expression for the genius of the Sumerian people; in this form they enshrined not only the complicated and generally savage legends of mythology proper, the theogony of the gods and their rivalries for the overlordship of heaven, but the story of man's advance in culture and art, the exploits of the divine or semi-divine heroes who led that advance, and finally, coming to more modern times, the great

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deeds of human kings and conquerors. It is clear that the composition of such was spread over many centuries, and while some epics relate to incidents in historic times others must go back to the very earliest days of Sumer; they may have been edited and rewritten, as is manifestly the case with the Deluge story, incorporated in the Gilgamesh myth in the third millennium BC but extant in more versions than one, yet their content at least is ancient. Only when men still dimly remembered the miracle that had supplanted the chipped or ground flint by metal tools could they have invented the myth of the Creation of the Axe. Enlil, immediately after he has 'moved away heaven from earth, moved away earth from heaven', proceeds to make the pickaxe which the Anunnaki, the Judges of the Nether World, give to the 'black-headed' Sumerian people:

The pickaxe and the basket build cities,
The steadfast house the pickaxe builds;
The steadfast house the pickaxe establishes,
The steadfast house it causes to prosper.

The house which rebels against the king,
The house which is not submissive to its king,
The pickaxe makes it submissive to the king.

Of the bad plants it crushes the head,
Plucks out the root, tears at the crown;
The pickaxe spares the good plants.
The pickaxe, its fate decreed by Father Enlil,
The pickaxe is exalted.

So, too, must we assign to an early date the poem which, like the Hebrew story of Cain and Abel, describes the beginning of the pastoral and the agricultural modes of life and the rivalry that divides them. The great gods, En-ki and Enlil, fashion and send down to earth the rustic deities Lahar and Ashnan:

For Lahar they set up the sheepfold,
Plants and herbs they present to him;
For Ashnan they establish a house,
Plough and yoke they present to her.
Lahar standing in his sheepfold,
A shepherd increasing the bounty of the sheepfold is he;
Ashnan standing among the furrows,
A maid kindly and bountiful is she.

The actual theogonies are coarse and barbaric, and the narrative is too often held up by long word-for-word repetitions, as when a god announces at length his intention of doing something and is immediately and at equal length represented as doing it, or when a message is given to a messenger and reproduced by him verbatim; but even so there is gold in the dross. A myth of the creation in which, for sweet water to be created and for the soil to

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become fruitful, the god En-ki has to marry his own daughter and then his granddaughter, to eat the eight plants to which the last gives birth, to be cursed by her grandmother Nin-khursag, and to be smitten with eight plagues that can be cured only by Nin-khursag's giving birth to eight gods and goddesses whose names are puns on the afflicted parts of En-ki's body—this is as poetically valueless as it is artificial; yet it does contain a description of Dilmun (Telmun) as the yet unfinished Garden of Eden which is authentic poetry:

> The land Dilmun is a pure place, the land Dilmun is a clean place;
> In Dilmun the raven uttered no cries,
> The kite uttered not the cry of the kite,
> The lion killed not,
> The wolf snatched not the lamb;
> Unknown was the kid-killing dog . . .
> The sick-eyed says not 'I am sick-eyed',
> The sick-headed says not 'I am sick-headed',
> The old woman says not 'I am an old woman'.

The great poem on Inanna's descent into hell contains much that is for us dull and hardly intelligible, but sometimes, as in the dirge for Inanna, the metre enables us almost to hear the chant of the chorus:

> My Lady abandoned heaven, abandoned earth,
> To the nether world she descended.
> Inanna abandoned heaven, abandoned earth,
> To the nether world she descended;
> Abandoned lordship, abandoned ladyship,
> To the nether world she descended.

while the appeal made on her behalf well illustrates the richness of Sumerian metaphor, even though all beauty of language is lost in translation:

> O Father Enlil, let not thy daughter be put to death in the nether world!
> Let not thy good metal be ground up into the dust of the nether world!
> Let not thy good lapis-lazuli be broken up into the stone of the stone-mason!
> Let not thy boxwood be cut up into the wood of the carpenter!

The Gilgamesh epic would seem to have taken shape not before the time of the First Dynasty of Erech, one of whose kings was named Gilgamesh, and the same should be true of the charming poem 'Inanna prefers the Farmer to the Shepherd', since again the shepherd god Dumuzi is synonymous with a king of Erech. From these half-mythical times and characters we come to what at least purports to be history with 'The Legend of Enmerkar and the Lord of Aratta', a real heroic epic in which the protagonists are mortals and the gods, as in Homer, intervene on behalf of their favourites. The final stage is reached when an actual event in history is celebrated on a purely human level and Sargon of Akkad tells the tale of his military adventure in Anatolia.

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In this literary *genre* the Sumerians did not stand alone. The Hurri also were writers of epic poetry of the mythological sort and, while they might in some cases borrow Sumerian tales, in others they dealt with their own legends the scenes of which were laid in Hurri territory; thus the Kumarbi legend, of which the text was found at Boğazköy, locates the battle between El and Kumarbi at Mount Hazzi, i.e. Mount Kasios, at the mouth of the Orontes river. From Ugarit there have been recovered numerous texts of Phoenician mythological poems such as that of 'Môt and Aleyn-Baal', and the 'Birth of the gracious and fair Gods', the 'Death of Baal', etc., while with the 'Legend of Kereth' we pass into the heroic world where tribal tradition is mixed with religious myth as it is in the Sumerian legend of Enmerkar and as it was in the Abraham saga on which the stories in the Book of Genesis are based. Interesting and important as are the contents of these poems, their literary merit is difficult to assess, if only because of the fragmentary condition of the texts and the uncertainty of their translation; but the popularity of the epic over so much of the Middle East compels us to regard the Sumerian examples as typical of Bronze Age achievement in an art form which was to be that of some of the world's greatest poetry.

That the Egyptians should not have employed this form for mythological themes is curious, considering how many such themes must have offered themselves to the poet; if there were heroic legends, no trace of them survives. The nearest approach to epic is the long poem celebrating Ramses II's doubtful victory at Kadesh; it comes late in time and the narrative form now used for, apparently, the first time in Egyptian verse may have been modelled on some foreign original; but the style is wholly Egyptian, with all the Egyptian faults of bombast and cliché grievously exaggerated.

Common to the Middle Eastern countries was the 'Wisdom' literature familiar to us from the Book of Proverbs in the Hebrew Old Testament. This consists of short aphorisms which may be written in verse or in prose; collectively they represent the nearest approach to philosophy of which the ancient mind was capable; but they are not informed or inspired by any philosophic system or any general principles of thought or ethics; they are disconnected 'wise sayings' of a more or less didactic character tersely expressed and readily memorized. Such were immensely popular. In Mesopotamia the earliest collection (found at Nippur) is Sumerian and dates from the first third of the second millennium BC, but some of the proverbs in it occur earlier and on other sites, while the latest redaction, in Neo-Babylonian, comes from Assurbanipal's library in the seventh century BC. The Sumerian 'Proverbs' are anonymous and were arranged in groups merely by their initial signs—those beginning with *šà* (the heart), or *uru* (city), being put together regardless of their sense. The Egyptian preferred to attribute authorship of the different collections to one or other of the great sages of the past, Ptahhotep, Kagemne and Hordedef, just as the Hebrews attributed their proverbs to Solomon, and in both cases there may be reason; Ptahhotep was a

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vizier of the Fifth Dynasty and two of the papyri containing his proverbs go back to the Twelfth Dynasty, by which time already they were recognized as classics and were popularly accredited to him. Certainly the vogue of these 'wise saws' begins very early, and goes on until the end of the second millennium BC, when the proverbs of Amenemope were first published.

The form of a proverb is as important as its content, if it is to be remembered and quoted. The Sumerian was satisfied if it was terse and epigrammatic and on the whole preferred the literal to the metaphorical expression:

> The wealthy are distant, but poverty is close at hand.
> He who eats too much cannot sleep.
> The heart has not spawned hatred, but speech has spawned hatred.

and only later did the Babylonian favour the verse form:

> Slander not, but speak kindliness;
> Speak no evil, but say that which is good.

But the Egyptian was from the first a stylist, and for the prose proverbs of Ptahhotep it is claimed that they are 'beautifully expressed . . . in the rules of elegant discourse'. For the old court official etiquette was as important as morality, and his sayings are a curious mixture of pious reflections and practical rules of behaviour:

> If thou wouldest that thy conduct be good, keep thee from evil. Beware of covetousness; it is an evil sickness, incurable.
> Be not arrogant because of thy knowledge, and have no confidence in that thou art a learned man. Take counsel with the ignorant as with the wise, for the limits of art cannot be reached, and no artist fully possesseth his skill. Goodly discourse is more hidden than the precious green-stone, and yet it is found with slave-girls over the mill-stones.
> If thou art a guest at the table of one who is greater than thou, take what he may offer thee as it is set before thee. Fix thy gaze upon what is before thee, and shoot not many glances at thy host, for it is an abomination to get upon his nerves. Cast down thy countenance until he greeteth thee, and speak only when he hath greeted thee. Laugh when he laugheth; that will be pleasing in his heart, and what thou doest will be acceptable.

It is not easy to recognize any literary quality in such aphorisms, apart from their studied naïvety, but in the original, for the Egyptian, they were 'elegant discourse', and we can see the sense of style maintained by the proverb-maker down to the time of Amenemope:

> God is ever efficient
> But man faileth ever.
> The words that men say are one thing,
> The things that God doeth are another.



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Or again, with an elaborate use of metaphor:

> Be resolute of heart, make firm thy mind,
> Steer not with thy tongue;
> The tongue of a man is the rudder of the boat,
> But the Lord of all is its pilot.

What does appear in Ptahhotep, as also in the satire on the professions quoted above in Chapter III, is a sense of humour which is peculiarly Egyptian. We find it again in the story of Sinuhe. One must needs suppose that the whole of the Middle East, in ancient as in modern days, was familiar with the prose romance, the sort of story with which some wandering entertainer enlivened the evening gatherings in court or cottage. Perhaps because they formed the stock-in-trade of professional reciters, who would have regarded any written publication as an infringement of their interests, none of those romances survives in Mesopotamia; but in Egypt a few of the most famous were copied out at one time or another, and serve as examples of what must have been a widespread popular art. In the tale of the 'Shipwrecked Sailor', thrown ashore on a desert island where he is befriended by a giant serpent, we have a foretaste of the *Arabian Nights*, as also, though in a more sophisticated vein, in the story of King Cheops and the Magicians; in this, indeed, the Pharaoh takes the place of Haroun al Raschid and the stories are told to beguile his leisure and have just that admixture of court splendour, bawdiness and magic that was to enchant Baghdad. The best of them is the Story of Sinuhe, an Egyptian official who, hearing of the murder of King Ammenemes I, fled to Palestine. There he was made sheikh of a tribe and captain of the host of the prince of Retenu and when a jealous rival challenged him to single combat ('at dawn, when Retenu came, it had gathered together its tribes, it had planned this combat. Every heart burned for me; the men's wives jabbered and every heart was sore for me. They said, "is there another mighty man who can fight against him?"') he slew him and seized his goods; but, rich and honoured in Syria, in his old age he bethought him of his former position at the court of Pharaoh and longed for burial in his own land, in 'the cities of Eternity'. Recalled by Sesostris I, he presents himself before Pharaoh, bearded and travel-stained, in Beduin garments, and is graciously received. 'Then the royal children were caused to be ushered in. Said his Majesty to the Queen, "Behold Sinuhe, who has come back as an Asiatic, an offspring of the Beduin." She gave a great cry, and the royal children shrieked out all together "It is not really he, O king, my Lord!" And His Majesty said, "Yes, it is really he."' The princesses plead for him, and he was bathed and shaved and dressed in fine linen ('I slept on a bed, and gave up the sand to them that be in it'), appointed court chamberlain and given a house, and a pyramid was built for him near that prepared for the king; 'and so live I, rewarded by the king, until the day of my death cometh'.

This is story-telling at its best—Sinuhe himself is a piece of real character

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drawing, the narrative is vivid, there is poetry and there is humour—the description of the little princesses' incredulity is quite delightful—and it is not surprising that it was immensely popular; but that does not mean that it was a folk tale. On the contrary, it is a highly sophisticated work of art, composed partly in prose and partly in verse, in which the form is more important than the matter, consciously stylized throughout and with every effect carefully thought out; for the ancient Egyptian it was a masterpiece of literature, and modern critics have not shrunk from ranking it as a world-classic.

Even if the story of Sinuhe be not founded on fact, as it very well may be, yet its narrative form purporting to be autobiographical sets it in a class almost by itself. The only other Egyptian composition to which the term 'historical' is in any way appropriate is the Carnarvon writing-tablet in which the Pharaoh Kamose describes how he launched the campaign which was to drive the Hyksos out of Egypt.[11] But while that campaign was a historical fact, yet the account of a single historical incident is not, properly speaking, history. No Egyptian, Sumerian or Babylonian man of letters ever wrote history as we conceive it today, in terms of unfolding processes and underlying principles. As we have seen in the case of the exact sciences, these peoples knew nothing about the psychological techniques of definition and generalization which the modern historian, in his field, takes for granted; with their world view, events came about not by any natural process of cause and effect but through the incalculable whims of the gods who had ordered everything from the beginning. Events as such were, of course, noted and written down, as in the case of the date-formulae in Mesopotamia, where each year was named after some important happening, and even a sequence might be recorded, as in the King-lists of Sumer and the tables of the royal ancestry at Abydos in Egypt; historical data might be inserted incidentally and even used as themes, as in the Kamose story or in that of the Anatolian campaign of Sargon of Akkad, 'The King of Battles'; but this did not lead to the writing of connected and meaningful history. The extent to which such history was incompatible with the psychology of the ancient world is curiously illustrated by the long inscription in which Entemena, ruler of the city of Lagash in the twenty-fifth century BC, records the restoration of the boundary ditch between Lagash and the neighbouring city of Umma, which the Ummites had destroyed. As this was a question of legal rights precedents had to be cited, and Entemena therefore passes in review the political relations of the two cities over a space of a hundred and fifty years; but instead of giving a factual narrative he fits known events into a framework of theocratic theory, and gods and men are so entangled as to be indistinguishable one from another, the actual incidents become insignificant and it is the apparent will of the inscrutable gods that must decide the case. But that is as near to history as the Sumerian could come. An Egyptian general like Thutiy might record on the walls of his tomb the campaigns in which he served, but only to boast of the

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prisoners he took and the honours he won; Ramses II expatiates at length on his heroism at Kadesh, but the poem is a paean, not a history.

At least one of the essential qualities of history, the orderly sequence of events, is present in the military annals of the Hittite kings. For each year of the king's reign there are recorded the campaigns in which he was engaged, the country in which he fought, the kings or chieftains whom he encountered, the names of the cities which he captured or burned; there is a great deal of historical information to be got out of these annals, but there is in them nothing of the science of history, and their literary merit is very small. In the account of every campaign the same stereotyped phrases recur and an identical formula assigns to the gods the credit of victory; it is for the most part dull reading; and yet when Mursilis II prefaces his list of wars with the explanation that his father's death, quickly followed by that of his elder brother, and his own accession to the throne as an untried youth, had together been responsible for a general revolt of all the vassal states which he had to bring back one by one into subjection, he does give to that list a certain logical unity. Every now and then the bare record is relieved by a human touch. He was advancing on Karkiša when its king offered his submission; Mursilis curtly reminds him that he had betrayed him who had set him on the throne, 'and now am I to receive you as my servant?' But when the terrified king sends his mother to intercede for him and the old lady throws herself at Mursilis's feet then, 'because this lady had come to meet me and had kissed my feet I had pity upon her', and he broke off his march and accepted the rebel's surrender. Again, there is a graphic account of a successful manœuvre—he was attacking a ruler named Pittaggatallis, and was anxious for a decisive victory but 'as they had scouts out, if I had advanced straight upon him then, his scouts seeing me, he would not have stood his ground but would have slipped away. So I turned my eyes aside and faced towards Pittaparash. And when it was night I changed direction and marched on Pittaggatallis; all night I marched, and was in his territory by dawn. When the sun arose I advanced on to the field, and the nine hundred men under Pittaggatallis came forward to give battle.'

The studied moderation of the Hittite annals does give them something of the objectivity at which the historian aims. In still more striking contrast to the braggadocio of a Pharaoh such as Ramses III is the curious apologia put out by the Hittite king Hattusilis III. Although it is couched in the form of a thanksgiving in honour of the goddess of Samuha that has not much more bearing on the text than has the dedication of a modern book; it is really an autobiography, covering all the early years of the king's life. Hattusilis's motive was to defend himself against the charge of treachery and rebellion against his nephew whom he had supplanted on the throne of Hattusas; his method was to set in order the events that led up to his action in a record which has all the air of being straightforward, objective and truthful, and its effect as propaganda is immensely strengthened by the modesty and moderation of its

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tone. The apologia, which might have served as a model for Julius Caesar's *Commentaries*, is a real historical essay, something which no Mesopotamian or Egyptian writer ever thought of attempting; the only parallel to it is the much shorter autobiography of Idri-mi, king of Alalakh, written about a century earlier, in which again we are struck by the royal writer's moderation and objectivity, very unusual in the ancient Middle East. While we may hesitate to assert, as some authorities have done, that Hattusilis's apologia is a definite expression of the Indo-European character of the Hittites, we must agree that it belongs to a category of literature which is peculiar to the Hittites and the Hurri. 'Here,' says Moortgat, 'for the first time in the ancient Orient, a man reveals a capacity for regarding his own life and the life of the nation in a meaningful relationship, for interpreting from a particular viewpoint a series of important events and actions, his own as well as those of others—in short, the capacity for thinking historically.'[12] To this we must add that the simplicity of Mursilis's language is not artlessness but a calculated literary style suited to his propagandist aims; his history is tendentious but convincing.[13]

In China, in the year 213 BC, the first emperor of the Ch'in Dynasty ordered the destruction of nearly all books written before that time, and made their preservation by private persons a political offence involving severe penalties.[14] Actually some works did survive, but today there is no piece of literature that can be assigned to a date earlier than Chou, and even then the attribution is to some extent arbitrary, though the Shang oracle-bones and inscriptions on early Chou bronzes now afford standards for judgement. It seems probable that the parts of the *Shu Ching*, the Book of History, which record details of the rulers of Hsia, Shang and Chou, belong in substance to the periods with which they deal, though there has certainly been later re-editing. Similarly in the *Shih Ching*, the Book of Poetry, the Five Sacrificial Odes of Shang, which the later Chinese attributed to the Shang period but modern scholars prefer to assign to Chou, nevertheless do probably incorporate much Shang material. Clearly there is here nothing that would justify an attempt to estimate the literary quality of Hsia and Shang writings.

On the other hand, it is worth while to note something about the general character of early Chinese literature. We have seen that in Egypt writing was confined for the most part to the priestly class and used mainly for temple purposes, and that in Sumer it was employed primarily for business purposes and was practised mostly by priests and to a limited extent by merchants. In China, in the earliest period for which we have detailed information, the ability to read and write was expected of every member of the privileged aristocratic class, and the young nobles would study treatises on poetry and music, history and rhetoric, and writing was itself regarded as a fine art. If we go back farther, though treading then on more doubtful ground, we can yet see something of the uses to which writing was put. The omen bones from

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Anyang show its connection with religion, though whether there was anything that could be called religious literature, corresponding to the hymns and psalms of Egypt and Mesopotamia, it is impossible to say. But the quotations incorporated in the *Shu Ching* and the *Shih Ching* do mean that the Chou period inherited from Shang the tradition of historical writing and of poetry, forms of literature of which the first is rarely to be found in Mesopotamia and was unknown in Egypt. It was a Chou soldier who voiced his homesickness in the poem:

When we went away
The millets were in flower.
Now that we are returning
The snow falls and the roads are all mire.
The king's business was very difficult
And we had not leisure to rest.
Did we not long to return?
But we were in awe of the orders in the tablets.

But the directness and the simplicity might well, we think, reflect the qualities of China's earliest verse.

## NOTES ON CHAPTER X

1. Galpin is here referring to the ancient music of China. Since the Ming period the five-note scale has been that officially observed, but the sixteenth-century authority, Prince Tsai-yü, maintains that the old music was heptatonic and cites in support of this a vertical bronze flute of the second millennium BC which he has seen and of which he gives detailed measurements. Dr Moule remarks that it seems unreasonable to doubt that the great classical instruments existed in the second millennium BC in possibly as perfect a form as they have today.

2. It is tempting to see in this fact, as well as in various representations of different instruments being played together, e.g. lyre, sistrum and timbrel, or psaltery, timbrel and double pipe, evidence for some definite theory of harmony. It is not, however, safe to make that assumption unconditionally. Miss Schlesinger notes that, 'if the musicians were only providing a number of notes in unison in timbre, i.e. in the composition of their masschords, the result would be an impressive and greatly enriched accompaniment of harmonic overtones, a natural harmony sounding above the melody and independent of theorical knowledge'.

3. B. Meissner, *Die Babylonisch-Assyrische Literatur* (Potsdam, 1927–28), p. 2.

4. O. Weber, *Die Literatur der Babylonier und Assyrer* (Leipzig, 1907), p. 2.

5. As Professor I. M. Diakonoff points out, the 'Warnings to the Kings' in Mesopotamia and the vivid Assyrian royal inscriptions ('Letters to the God') were written during the eighth and seventh centuries BC. Furthermore, Professor Diakonoff avers that many major Babylonian literary works were created in the Kassite and post-Kassite periods, i.e. *after* the eighteenth century BC. (The cosmogonic epic, 'Enuma elis', 'The Poor Man of Nippur', 'The Righteous Sufferer', 'The Babylonian Theodicy', 'Surpu', 'The Man and His Slave'.) See also the works of W. Lambert.

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6. Professor I. M. Diakonoff is of the opinion that this material is not so much inadequate as insufficiently explored. We have philological editions of the different texts and fragments but we have no works devoted to their historical or aesthetic evolution. But see W. Lambert, *Babylonian Wisdom Literature* (Oxford, 1960).
7. S. H. Langdon in *The Cambridge Ancient History*, I, p. 443.
8. Breasted's translation.
9. The texts of Ipuwer and Neferti are certainly literary compositions but betray clear signs of the disorders of all kinds characterizing the First Intermediate period; see J. Spiegel, *Soziale und Weltanschauliche Reformbewegungen in Altaegypten* (Heidelberg, 1950).
10. i.e. at a picnic on the Nile bank.
11. Professor I. M. Diakonoff points out that the story of General Thutiy belongs to this class. There are also several stories after 1200 BC.
12. Anton Moortgat, *Die bildende Kunst des alten Orients und die Bergvölker* (Berlin, 1933).
13. On the subject of historical literature and the religious philosophy of history which it implies, cf. R. C. Dentan (ed.) *The Idea of History of the Ancient Near East* (New Haven, 1955).
14. Professor Shigeki Kaizuka *et al.* point out that the first emperor of the Ch'in Dynasty ordered the destruction of private copies of the classics and works of philosophy. Copies were kept at the capital but these were later destroyed inadvertently by rebels when the dynasty fell. The list of proscribed books excluded works on medicine, divination and agriculture. The emperor was mainly concerned with the suppression of the chronicles of the feudal states which contained uncomplimentary references to his ancestors. It is in the field of the chronicles of the Chou period that there were the most serious losses.

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CHAPTER XI

# THE LIMITS OF CIVILIZATION IN THE BRONZE AGE AND THE CONDITIONS OF CIVILIZED LIFE AT THE END OF THE THIRTEENTH CENTURY BC

If this History had been planned as a World History, with no hint of the limitations of its scope, the author of this record of the Bronze Age would have been the first to admit that it was partial, disjointed and inadequate. In the foregoing chapters only passing reference has been made to the vast areas comprised within the territories of the Union of Soviet Socialist Republics, and to Europe in general, including the British Isles; nothing at all has been said regarding Africa, apart from Egypt, or the American continent. But this seeming partiality is explained and justified by the fact that our History is that of the scientific and cultural development of mankind, and its interest is necessarily centred upon those regions in which development can be observed, and that within the time-limits of the Bronze Age.

In the first section of the volume the multifarious peoples of Asia, Africa and America were all alike discussed, and that with good reason. Up to the close of the era with which that section dealt all those peoples alike shared in the comparatively uniform culture of Neolithic man: in the sixth millennium BC an onlooker would have seen them all more or less equally equipped, aligned at the starting-point of real development, and would have found it impossible to foretell which of the competitors was going to make genuine progress, and when. Of the African tribes many never advanced at all, others only at a date far outside the scope of this volume; the inhabitants of Central and South America who ultimately produced the Maya, the Peruvian and the Aztec civilizations were, so far as we know, at much the same cultural level in 1200 BC as they had been in the fifth millennium—at least we have no proof of any change as yet. With such countries, then, we are not here concerned. In so far as they did in the course of time achieve civilization or make some noteworthy contribution to science or art, they will be dealt with by other writers; but the background from which they will be seen then first to emerge will still be the Neolithic prehistory described in the first section of this volume.

Our purpose has been to mark the outstanding features of man's cultural advance in the formative period of the Bronze Age, and the fact is that the advance was for the most part local, confined to the few communities which developed an urbanized civilization. Logically, therefore, our attention has

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been concentrated on such communities, passing over those which, occupying the greater part of the earth's surface, remained for the time being in the primitive state of barbarism and, at best, borrowed from their more inventive neighbours such techniques and practices as might ultimately equip them to contribute in their turn to general progress. But even within those limits equality of treatment is denied to us, for only in the case of certain peoples do we possess the written records without which it is impossible to examine in detail and to follow with assured accuracy the steps whereby man arrived at the arts and institutions which constitute material civilization. Even where the material remains bear witness to intellectual advance and to a high order of culture, the total absence or the sparse survival of literary evidence may make the real character of the culture problematic. When, as in the case of India, we are thrown back upon purely archaeological evidence, we can indeed draw a picture of civilization, but cannot trace its genesis or its outcome; we are presented with facts in a historical vacuum, and our interpretation of the facts is only too liable to be arbitrary and subjective. When, as in the case of China in the Shang period, there are written documents but those are strictly limited in range and character, then our natural inclination to interpret them in the light of our knowledge of later China may well lead to an anachronistic falsification of history. Thus in the Anyang bone-inscriptions there recurs the sign *yi* meaning a settlement of people; at a later date the character denotes a town, a territory or a possession, and from this it has been argued that the rural community played a very important role in the constitution of the Yin state: again, the *ching* sign representing a well is used to mean 'fields', and from this, and from the data of later literary sources, it is concluded that in the Yin period land-cultivation was in common and was organized on the so-called 'well-fields' system. Such conclusions *may* be right, but they remain assumptions which ought not to be cited as history, and it is better to confine ourselves to the objective view which may appear less scholarly but does at least avoid the risk of reading our own prejudices into the remote past.

In other areas, especially in Europe (Map XIX), the case is different. Whereas in India excavation has thrown a spotlight upon a single phase of history, virtually isolated in the surrounding darkness, in Europe the archaeological evidence is relatively abundant, so that it is possible to trace everywhere innovations and improvements in the technical field and, by the evidence of man's handicrafts, to follow the intercourse between different ethnical or cultured groups and the migrations of tribes from one part of the continent to another. But on the moral and intellectual sides we have no evidence at all. Of the thoughts and ideals of those tribes we know nothing, and for Europe and north-west Asia the whole Bronze Age belongs to prehistory.

None the less is it true that in the course of the Bronze Age great changes took place throughout those regions, changes which we can observe sometimes in considerable detail, and that in 1250 BC conditions in Europe

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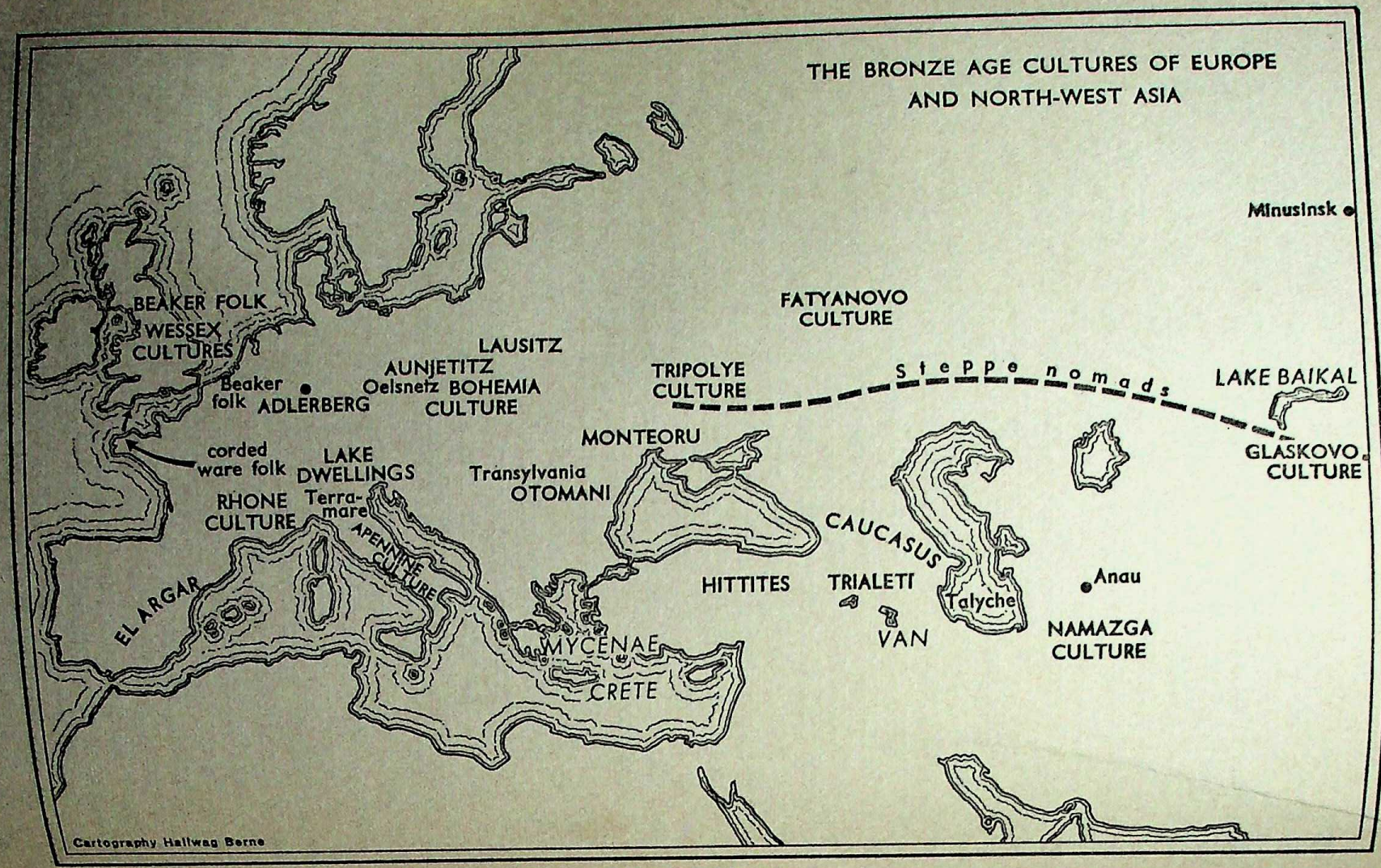


MAP XIX

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and the territories of the USSR were altogether other than they had been in 3000 BC.

The change was in its origin, as Professor Hawkes has said, 'an affair of Oriental influence, the West receiving, tardily and in comparative poverty, what the East was only giving after long familiarity within its own borders. But we have never found it possible to call this reception merely passive. The peoples of Europe had already developed cultural traditions within the limits imposed by their Mesolithic economy, and the spontaneity and adaptive vigour with which they took to themselves the elements of Oriental culture that reached them typify not passive reception but positive reaction. From the Danubian Neolithic to the Mycenaean Bronze Age, the result was characteristically not second-hand reflexion of Eastern achievement but integration of Eastern with native elements in something essentially new.'[1] To this should be added that in each region the cultural tradition was so far peculiar that when the eastern elements were introduced the resultant amalgam was not the same; throughout the length and breadth of Europe, and again in the lands east of Europe, we see a diversity of Bronze Age cultures which may tend to compose itself into a consistent pattern but preserves none the less the individual character of each of them.

As we have seen already, it was the development of metallurgical techniques which, advancing along the trade-routes and concentrating upon those areas where prospectors could recognize the presence of metal ore, gave birth to the local Bronze Age cultures. In Europe the most important, and one of the earliest, was the Aunjetitz culture of the Bohemian-Middle German region. There copper ore was abundant, and tin was found both in association with it (in the Oelsnetz district) and independently in the area from the Erzgebirge westwards to the Thuringian hills, round the upper waters of the Saale; there, then, the old workers in copper could turn their practised technique to good account by the use of the superior alloy whose merits had been discovered by the east. The presence amongst their manufactures of the torque and the knot-headed pin proves that Oriental influences had been brought to bear upon the native founders, and further dates the introduction of true bronze to eastern Europe to about 1900 BC. Within a century, by 1800 BC, the Aunjetitz culture of Bohemia was fully developed and its products, serving as patterns for imitation, had been carried far afield, spreading its influence through Thuringia and Saxony right up to the Rhineland (where the Adlerberg culture is within the Aunjetitz orbit) and eastwards across the Carpathians to give birth to the Monteoru, Otomani and Witenburg cultures of Transylvania.

The Rhône Bronze Age culture is proved by its torques and knot-headed, roll-headed and trefoil-headed pins to be an offshoot of that of Aunjetitz, but it was still a fairly individual development; it was interrelated with the Italian, and it gave rise to the Swiss lake-dwellings culture, but its ramifications extended westwards to Languedoc and the Gironde, and northwards

MAP XIX

Cartography Hallwag Berne

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to the Franche-Comté. The latter area, together with Alsace and Lorraine, was at the beginning of the millennium being settled by a pastoral warrior group distinguished by their burial customs (single graves under round barrows) who as the 'Corded Ware' people had previously overrun much of central Europe and were now moving west; about 1750 BC they invaded and occupied Brittany, displacing or subjugating the old builders of the Breton megalithic monuments. The northern elements of these tribes came into touch with the Adlerberg culture, and this contact reinforced the influence upon them of Aunjetitz metallurgy.

Spain is one of the richest metal-bearing regions of Europe, and the Iberian copper-mines were from early times exploited by Aegean prospectors. The first landings were made on the Almerian coast, a fact which suggests that the approach had been by way of the African shores of the Mediterranean, and, judging from the female stone figurines found on the Spanish sites, the settlers had come from Cyprus; but the corbelled tombs which they introduced are more closely paralleled in Crete, and Cretans were perhaps more likely to travel far afield in search of copper than Cypriotes who possessed resources of their own. Early in the third millennium Almeria could show big fortified trading-citadels, as at Los Millares, and was extending its culture northwards along the Spanish coast; later on the same culture is found spreading up the coast of Portugal also, to Cintra and beyond, so that the Los Millares people were opening up the Atlantic sea-ways, eventually reaching Britain, and popularizing along their route the megalithic tombs of Iberia.

From its beginning this was a mixed culture in which the impetus was derived from the Aegean but the development was mainly due to native genius, its roots being traced to the arts of the local Neolithic Age. Undoubtedly a certain measure of urbanization did result from the concentration of mine-owners and industrialists, but for that we have little contemporary evidence; we may accept the fact, but we cannot visualize it. No very great advance had been made in the days which saw the wide expansion of the south Iberian culture; the adventurers who crossed the Pyrenees into southern France and those who voyaged overseas to Brittany exported to those lands the tomb customs which had originated in the Aegean and the pottery beakers inherited from their Stone Age ancestors, and in so doing they made an important contribution to the primitive cultures of their trade customers; but they could offer nothing of a higher order. They were themselves still in the Chalcolithic stage. Tin is virtually confined to the northern districts of Spain, and it would seem to have been neglected by the more backward local population, for the metallurgists of the south of the peninsula, the Los Millares people and their immediate successors, long continued to use only the unalloyed copper of their own mines.

It was probably through trade connections with Bronze Age Italy (and perhaps southern France also) that the importance of the Spanish tin deposits

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was recognized—certainly there are types of Spanish implements such as the halberd which suggest a connection with Italy; but for the most part Iberia was thrown back upon its own resources. The old sea-route used by the Aegeans could not stand against the competition of the overland trade routes that had now been opened up across Europe, so that Spain became a backwater, and there is evidence to show that a period of relative poverty set in. The newly discovered metal alloy resulted in the development of a culture more or less peculiar and indigenous, the El Argar culture, which arose about 1700 BC and lasted into the second half of the millennium; but it did not diverge in any marked respect from the general European pattern, and was really but a rather backward branch of the continental culture. But it is at least possible that Iberia, in spite of its isolation, maintained certain trade relations with Ireland, clinging still to a centuries-old tradition, and that the Irish halberd is derived from Spain.

The old Amber Route, which had brought the Baltic into touch with the Mediterranean, ran north by south through Aunjetitz territory. But the amber merchants used also a western route, through Scandinavia and by sea to Britain and across north Britain to Ireland, where amber could be exchanged for gold. A third trade-route, branching off from the first, ran from Saxo-Thuringia by way of the Lower Rhine to the North Sea coast; this brought the Aunjetitz culture into relation with north-west Europe and also facilitated the export of Irish gold and bronze to the continent, the Irish boats sailing up the Channel and over to the mouths of the Rhine. The distribution of metal types bespeaks a remarkably close intercourse between the different and often distant areas. There were, of course, regions remote from the trade-routes where the old Neolithic or Chalcolithic cultures persisted with but little change; but the greater part of the continent came in time to enjoy a Bronze Age culture which, though ultimately inspired by the Orient and though varying to the extent that it is possible to distinguish the products of particular areas, was yet so far uniform that it may properly be called European.

That it should be European and not merely pseudo-Oriental was the necessary result of conditions. Contacts with the ancient civilizations of the Middle East were indirect, and what the east contributed to Europe was not so much models as skills. The old metal-prospectors and travelling smiths who had first followed the Amber trade-route and then branched off wherever business might lead them—itinerant merchants such as the 'torque-wearers' who made their way into Alsace (see pp. 571 and 573)—took with them ingots or half-finished goods to be worked up to suit the taste or the needs of their barbarous clients. Later in time the Mycenaeans, whose colonies dotted the Mediterranean coast, had to pay for what they bought with goods acceptable in the local market and the easiest way of doing that was to train local craftsmen. In many parts of the thinly-populated continent hunting was still as important as agriculture, and in many parts agriculture was still of the Neolithic type

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according to which crops would be grown on land cleared of undergrowth by burning and after two or three years, when the soil was exhausted, the farmer would move elsewhere; nowhere was there that concentration of organization which makes possible the development of cities, and nowhere those stable conditions which are expressed by the great Oriental kingships. The foreign merchant, therefore, had no central mart where he could sell his goods, but had to go in search of clients;[2] and his clients were not wealthy monarchs who would buy luxuries wholesale but petty chiefs and their followers, of small means and fastidious tastes. Instead of being the servant of a royal despot, working to order, he was a free agent using his ingenuity to meet the varying demands made upon him, and it was to his interest to learn from his customers; thus it was that while his technique was altogether in the Oriental tradition the things he and his pupils made tended to assume a character of their own.

Several times in this history emphasis has been laid on the spread of ideas. New ideas can be spread only by human carriers. In the case of Bronze Age Europe this traffic is admirably illustrated. Here the techniques elaborated in the Orient are seen to be diffused far and wide by the wandering merchant-smiths; but there result from them not mere copies of the Oriental models but modifications of them, or new creations, which foreshadow a distinctly European civilization.

Trade was the normal medium, but as well as trade, war and folk-migrations spread the knowledge of styles and techniques; thus it was that the invasion of Wessex by the 'bell-barrow' people, aristocratic immigrants from Brittany, made of western Britain an entrepôt of the Aunjetitz culture. Moreover, such movements gradually resulted in a change in the ethnic character of Europe which foreshadowed something of the continent's future. The westwards advance of the 'bell-barrow' culture signalizes the emergence of the people afterwards known to us as the Celts. In the latter part of the Bronze Age the backward tribes of northern Europe were coalescing, in their relatively undisturbed forest-tracts, as the ancestors of the Germanic peoples. The founders of the Apennine culture, who had poured across the Alpine barriers, by-passing the Terramare hut-builders of the Po valley, secured Italy for the Italic peoples. In central Europe the old Aunjetitz culture had lost the momentum of its creative period, and about the middle of the second millennium BC was replaced by the Lausitz culture, originally an offspring of the Aunjetitz but remodelled by a northern people (perhaps members of the Slavo-Baltic tribes), who cremated their dead and preferred barrows to the flat graves of the Aunjetitz folk; Lausitz influence spread westwards as far as the British Isles, while in the south it would seem to have been responsible for the development and, to some extent, the re-population of Illyria and Thrace.

Progress in north-western Asia began later and was less consistent than in Europe. Much of this was steppe country where cattle-breeding was the

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main industry and the people therefore nomads or semi-nomadic; such people are more likely to import than to manufacture metal implements or weapons. Importation was easy. It has been remarked that the Otomani and Monteoru cultures were indebted to Aunjetitz; but cultural influences came rather from the south, from the Caucasian area which was the home of the earliest metal-working industry. In Transcaucasia, where ore was available, even a predominantly pastoral people were bound to borrow the metallurgical techniques practised by their neighbours. The crop-raising peoples of southern Turkmenia (the pioneers of culture in what are now the USSR territories) certainly manufactured their own metal instruments and ornaments, as is proved by the discovery of furnaces and copper slag in ruins of the big village settlement at Namazga Tepe. There, in the Namazga IV level, which corresponds roughly to Anau III, all the evidence points to Iranian influence being particularly strong in the second half of the third millennium BC; the painted pottery shows contacts with Tal-i-Bakun in southern Persia, with Susa and with Sialk III, and the Russian excavators emphasize its resemblance to that of the Quetta culture of Baluchistan. It must, however, be remarked that most of the locally made metal objects from Namazga Tepe are of copper, though bronze does also occur.

The general character of the Namazga culture is relatively simple, that of a community living on a backwater rather than on any important stream of progress, whereas in Caucasian Georgia the barrows of the tribal chiefs yield bronze weapons and gold and silver objects, excellently made by local smiths, which show that early in the second half of the second millennium BC this Trialeti culture had reached a high level. It was a curiously mixed culture. Some of the metal types recall those of such sites as Talyche, on the northern borders of Persia, others are paralleled as far afield as Mycenae, others again come from the Lake Van area; the most remarkable are bowls with repoussé decoration, scenes of animals and men, which are indisputably of native inspiration, and these are by far the most barbaric. At the very end of our period, i.e. in the thirteenth century BC, sites such as Gandja-Karabakh and Kuban show a later but not dissimilar culture in which, though the pottery is local—and incidentally very fine—the metal-work betrays the influence of foreign schools. Only by slow degrees did the knowledge acquired by the southern tribes of Transcaucasia penetrate to the forest regions of the north, where men lived by hunting and fishing in purely Neolithic conditions, and it was only in the second millennium that invaders introduced there the arts of husbandry, cattle-breeding and metallurgy and a Bronze Age culture (known as the Fatyanovo culture) arose in the valley between the Oka and the Volga rivers. Another outpost of bronze-working technique was established about 1200 BC in the neighbourhood of Minusinks, but it was an outpost only; Siberia remained Neolithic, and so far from progress being made tribes in the Baikal region preserved into the nineteenth century AD the Glaskovo culture which archaeology has brought to light from the second millennium BC.

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Even from this brief survey it must be obvious that archaeological research has supplied us with an immense amount of information regarding the prehistory of Europe and north-western Asia. But just as obviously are the limits of our knowledge implied by the terms which we are driven to use. We talk of the 'Beaker' people, the 'Bell-barrow' people, the 'Terramare' people, and of the 'Aunjetitz' culture, the 'Adlerberg', the 'Lausitz', the 'El Argar' and the 'Apennine' cultures, thus identifying a people by some peculiar product or feature, a culture by its habitat or, more often, by the name of the place in which the relics of it were first found. The fact is that we do not know who any of these peoples were; we know scarcely anything about them, only about the things they made and used. But the more we study their material remains, which are the sole basis for our judgement, the more are we forced to recognize that none of these tribes or groups concerns our present purpose, for at this stage of their existence none of them made any original contribution to the progress of mankind. Starting as savages, they did indeed better themselves by means of borrowed arts, but they invented nothing that was new or to the general good. In our summary account the term 'culture' has recurred with wearisome iteration; its constant use merely emphasizes the fact that here the term 'civilization' is quite inapplicable. It is, of course, true that, whereas some groups were to stagnate or to disappear, the occupants of some of these great regions were in after times to play a part in man's advance no less important than that of the Sumerians, the Egyptians or the Babylonians. But for us their prehistory only acquires significance after they have achieved historic stature; and by that time they are no longer 'the Beaker folk' or 'the corded ware people', nor even, perhaps, the linear descendants of such, but a mixed stock which directly or indirectly owed something to the one or the other of those prehistoric cultures, or perhaps to both. Within the time-limits of the Bronze Age we can attribute to the various and shifting 'groups' and 'cultures' those shadowy creations of the archaeologist—promise, perhaps, but not performance.

It is, therefore, within the narrow field of the literate peoples alone that we have tried to show how there were developed the early phases of civilized life. In treating of the elements that go to make up civilization—agriculture, law and trade, sciences and crafts, religion and art—it has seemed necessary to consider each in turn, abstracted from its context, merely observing how in each community they were affected by local conditions, took varying shapes, were furthered or hindered, sterilized or made fertile, by the different patterns of society. By the detailed analysis in the abstract of what are in fact indivisible parts of a greater whole we may lay the foundations of the study of that whole; but it must not be forgotten that such isolation of the component elements is essentially artificial. Civilization is not merely the sum total of the arts and sciences, the performances and the beliefs of an accomplished people; civilization is a manner of life. Our analysis of the means to civilization has touched only parenthetically on the ends which they served; it is time

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therefore to assess, so far as possible, the effect which the astonishing progress made by man after the invention of metallurgy exercised upon his life.

For this purpose we cannot deal with society as a whole. Civilization did not result in an impartial distribution of benefits. The material progress achieved by man could not have been made without forced labour, nor maintained without it; in the most enlightened state, therefore, there were still slaves for whom civilization did not spell liberty, still serfs whose rights were limited and their opportunities for the better life but little enlarged; and these classes inevitably formed the bulk of the population. Progress has always originated from and been developed by the superior intelligence—and the more favourable conditions—of the minority, and has ministered primarily to the well-being of a social élite. If we ask what effect the changes wrought in the Bronze Age had upon the manner of man's life we must not consider the case of the slave, whose condition had been relatively unaffected, any more than that of the king or ruler, whose splendour was in any case exceptional, and from the point of view of man's history may well have proved ephemeral and inconsequent. It was the citizen, the free man, priest or merchant, landowner or skilled artisan, who reaped the benefits of civilization, and his normal life is the standard by which progress should be judged.

But because our history is that of the advance of man in general our summary must not be regional; it is not a case of portraying the life of an individual citizen of Egypt or of Mesopotamia, of China or India, of the Hittite or the Phoenician states; rather is it to mark how the combined or separate experience of all those countries had opened up to man as such the possibilities of a liberal existence. No citizen of any of the states enjoyed all the rights and privileges of his contemporary world, but those which he did enjoy, whether shared by others or peculiar to his own society, did help to enrich the human heritage. If, therefore, we disregard regional accidents and weave together threads drawn from diverse sources, our resultant pattern will not indeed reproduce that of any one society but should represent not unfairly the dynamic concept of civilization which man had now evolved and was handing down to future generations.

None the less is it true that regional differences, though they may be explained as the accidental results of local conditions, bear witness to one of the most important social changes that took place in the course of the Bronze Age. The accidents of physical surroundings—of soil and climate—naturally led to differences in the manner of life of the various groups; but with the perpetuation of such differences and with the induration of tradition there were evolved distinct mentalities. With, on the one hand, the centralization of government tending to crystallize tradition and, on the other, foreign wars not only emphasizing the contrast between one group and another but also picturing everything alien as inimical, there was born the local self-consciousness which makes for nationalism. At the beginning of our period we found social groups distinguishable more readily by their geographical

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location than by their cultural idiosyncrasies; at its close we are confronted by nations. In the thirteenth century BC an inhabitant of the Nile valley regarded himself primarily as an Egyptian, a member of that social order which was based on and maintained by the divinity of Pharaoh; he despised anyone who did not share that status; his whole outlook was peculiar to the land of his birth; the man and his country were indissoluble; to live away from Egypt was exile; to die away from Egypt was damnation.[3] The citizen of Babylonia, a man of very mixed blood, with far wider interests and a less intense love of the soil, although a narrower patriotism devoted him to the city state of historical tradition was still in the broadest sense a Mesopotamian. The yet more mixed members of the confederation which was the Hittite empire held themselves aloof from their neighbours and in spite of internal jealousies defended the formidable unity of Hattusas. The Phoenicians tolerated for commercial reasons the outsiders with whom they trafficked, but clung to their independence with passionate tenacity; their centres of government were separate and individual—Ugarit, Byblos, Sidon and Tyre—but each of them was Phoenician first and foremost. Lastly, the Hebrews were a 'Chosen People', a nation set apart.[4]

In 1250 BC then, any man in the civilized countries of the Middle East was a citizen or a subject of one of a number of recognized national states.[5] But this particular allegiance constituted no threat to his personal security. It is true that the birth-pangs of the states had generally meant wars between rival rulers, with the resultant risk of ruin to the individual citizen; but at this date he profited by what must have appeared to him an assured stability; his world was a world at peace,[6] and it was difficult to imagine that any serious breach of the peace could occur, or anything upset the seemly order of international coexistence.

Admittedly, one great power had disappeared. But it was now a century and a half since Minoan Knossos had gone down in flames, and for peoples outside Crete that had really made but little difference: the Mycenaean heirs of Knossos carried on the old traditions, and that in a more cosmopolitan spirit, for they were keener and more accessible traders, and with their merchant colonies established on the Asiatic mainland, as at Ugarit, they brought the Aegean into closer touch with the rest of the Middle East than the Minoan Cretans had ever done. It was true that one heard tales of far-off troubles, that 'the isles were unquiet', that the attitude of the ruler of Libya seemed rather menacing, and that Assyria was growing formidable; and everybody knew that the Hittite king had a campaign every year—but these were mere border affairs, which were the concern of the regular army, and the troops were engaged in maintaining the peace, not in disturbing it. What really mattered were the relations between the great powers, and those were excellent. Egypt, Babylon, Hattusas, the Syrian states, seemed to have renounced all their old enmities. The dynasts were linked together by political marriages; even a minor ruler like Niqmad of Ugarit had espoused

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an Egyptian princess, while the Great King of the Hittites had visited Egypt in person[7] to attend the marriage of his daughter to Ramses II; another daughter of Hattusilis was the wife of Bentesina, prince of the Amurru. Regular embassies attached to the different courts assured the smooth settlement of minor difficulties, and so anxious were the rulers to have their interests represented in palatable form that they would even employ foreigners in the diplomatic service; thus Amenophis III had sent a Hurrite, Irshappa, as his envoy to Arzawa and Tili-Šarruma, prince of Carchemish, employed an Egyptian who was so thoroughly naturalized that he wrote his name in Akkadian form and in Hittite hieroglyphs upon his seal. Whereas the wars of former days had so often been occasioned by disputes regarding the ownership of some frontier town or province, these important questions were now peacefully settled by diplomacy, and for negotiations of the sort the ambassador might be granted plenipotentiary powers and entrusted with a facsimile of the Great Seal of the Hittite king; there could be no stronger evidence of the wish to avoid war at all costs, which, after the indecisive battle of Kadesh, governed the policies of the exhausted Middle Eastern powers.

A world at peace gave to the individual not only a feeling of stability which made effort worth while, but also the leisure and inclination for self-expression. Frontiers were open, so that a man could travel freely, and the governments encouraged trade, so much so that a royal treaty might secure the rights of merchants or artisans of one country to pursue a seasonal occupation in another, returning home for the unprofitable part of the year, while, on the other hand, the local merchants were protected against unfair competition by foreign rivals. The personal safety of travelling traders was guaranteed, and we even find the Hittite queen paying compensation for the sinking of a Ugarit merchant vessel outside its territorial waters allegedly due to Hittite sabotage. A well-organized system of credit enabled the merchant-adventurer to finance his expeditions with funds provided by private bankers, by the temple or the palace at a fair rate of interest, and both sides were protected by the legal conditions specified in the contract. International trade not only brought foreign goods and luxuries into a country, but also opened men's eyes to new inventions and their minds to new ideas; whether a man voyaged abroad or stopped at home his horizon was not circumscribed by the frontiers of his state, but he could feel himself to be, in a measure, a fellow-member of a wider community, of a union of states which together made up the civilized world.

In fact, of course, the 'union of states' was simply the mutual tolerance of autocrats anxious not to be involved in war. The citizen who profited by his country's foreign policy had nothing to do with the framing of it. He could boast of being a freeman, but for him 'freedom' meant only that by law he was absolved from certain unpleasant obligations and was licensed to live his own life after his own fashion within the limits of the law. But that happy state of affairs was a fortunate accident; the absolution and the licence had been

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granted and could be revoked by something wholly outside his control. Man had not yet evolved the idea of 'freedom' in a democratic sense, the sense in which the Athenians were to use the term seven centuries later: a citizen of the Middle East in the Bronze Age lived under the law and might approve of the law, but he had no say in the making of it.

Any suggestion that the code of law might be drawn up by the people, or in consultation with the people, would in those days have been condemned as paradoxical and impious.[8] Law emanated ultimately from a god, and was enunciated either by the god himself (as in the case of Pharaoh) or by his official mouthpiece, king or priest; its authority therefore was absolute and unquestionable. The administration of the law was a different matter in that the officials were human; the citizen might complain of injustice or corruption, but his appeal was to the gods, for the correction of abuse, not for any amendment of the code. However hardly the terms of the law might bear upon the individual he was obliged to accept it as it stood.

Nowhere, in the course of the Bronze Age, had man attained that moral outlook which would make him see an anomaly in the fact that all men were not equal before the law. The gods had so designed the world; men were not equal, and the divine law accorded with the will of the gods. It was therefore no injustice, but a frank recognition of the facts, that distinction was made even amongst freemen, that there was one law for the rich and another for the poor, one law for the nobleman and another for the man of the middle class; rather was it a proof of the essential justice of heaven that the nobleman's privileges were counterbalanced by heavier punishment for any misdoing and that middle-class inferiority found compensation in lighter dues. In any case the free citizen had his measure of freedom guaranteed to him—indeed except when by his own fault or by the accident of war he forfeited freedom—and although he served an autocratic government he was not a slave.

The institution of slavery was traditional, universal and essential to social life and progress, nor was any man's conscience (not even the slave's) hurt by it. Custom and law alike vacillated uncertainly between the two incompatible theories, that a slave was a mere chattel, and that a slave was a human being in sorry circumstances but not altogether without claims upon his fellow-men. In practice the second view seems to have prevailed most often. When slavery was incurred for debt it was difficult to maintain that the temporary sentence[9] deprived the debtor of all human rights, and even when the slave was a foreigner, bought and sold as merchandise, he was a valuable possession whose worth might be increased by decent treatment. In practice, therefore, slavery was of a mild type, and the slave-owner might pray that he receive from god as much clemency as he extended to his slaves; there is no reason to think that the owner was necessarily brutalized by the institution which all regarded as part and parcel of the divine scheme of things. On the other hand the gulf that separates the freeman from the slave,

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and the fact that the private citizen could possess slaves of his own, emphasized his free citizenship; the privilege that he enjoyed, and the sense of mastery, profoundly affected his view of the relation in which he stood *vis-à-vis* the state.

He accepted readily the fact that the government of the state was autocratic and absolute; its power over him was unquestionable and its demands upon him might be exigent. But that did not make him the slave or the victim of a tyrant. The head of the state was either himself a god, or represented a god; its demands upon him were made in the name of a divine being upon whose goodwill depended the welfare of each and all; the service that one rendered to the god was, as it were, an insurance premium which no man could grudge. Some people believed that man had been created for no other purpose than to produce food for the gods; however that might be, it was certainly true that the gods expected and enjoyed the sacrifices which men offered to them, and would miss their accustomed meals if through the slackness or the penury of their worshippers such were to fail. The god who was Lord of the state depended on his subjects for his own well-being, and since their offerings must be according to their means their prosperity was to his own advantage. Granted that the state required of its citizens blind obedience, this was not a rule of brute force; it was no case of a human tyrant dragooning his fellow-men; enlightened self-interest recognized the benefits of a divine autocracy, and the dignity of the individual did not suffer because he acknowledged the absolute supremacy of god.

So far as can be gathered from the documents of an age when philosophic thought found no expression, the burden of state authority sat very lightly upon men's minds. They believed that they enjoyed a freedom which in fact did not exist, but the illusion satisfied them. The political history of the time recounts innumerable attempts by conquered peoples to shake off a foreign yoke, for there they were rebelling against the enforced rule of a human master; but there is no record of the citizens of a state trying to upset the state régime,[10] for that would have meant fighting against god. Even when Akhenaton disowned the Egyptian pantheon and dishonoured their temples his apostasy, however unpopular, aroused no violent opposition even from the powerful priesthood of Amon, so that only after his death could the counter-revolution take place; and that because of the divinity of the Pharaoh himself. The Hittite king could be tried and executed by the *pankus*, the General Assembly of his warriors, but only if he himself offended against the divine law which as a man he was supposed to maintain; the *pankus* in such a case was not in revolt against the state but was defending it. The subject of a theocratic state acquiesced automatically in the inviolability of the state and in its absolute rule, and saw in that no infringement of his personal liberty; he was, under god, a freeman and a master of men.

Undoubtedly the idea had been born that the state was run for the benefit of its citizens.[11] Of course, the intention of the god might be thwarted by the

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incompetence or the dishonesty of his ministers, but the humblest man, such as the 'Eloquent Peasant' of the Egyptian tale, need not hesitate to appeal to the god—in this case Pharaoh—or to his mortal vice-regent; the freeman, in fact, had his rights, which the government could not disregard without giving offence to heaven. However unmoral might be the behaviour of the gods themselves, they had yet ordained for men a social code which corresponded more or less to morality; it overrode human values in so far as it encouraged slavery, but the personal value of the individual free citizen was established by it, and such a one could, although he had no say in the shaping of the laws, none the less claim to be a responsible member of the state.

The individualism of the citizen was symbolized by his right to hold private property, especially in land. The two primitive systems whereby land was either communal or was temple property, i.e. owned by the god, were gradually breaking down in all the more civilized countries. It may be that the communal system still persisted in China in the Shang period, but elsewhere it had vanished long before the end of the Bronze Age.[12] The temples still possessed enormous estates (and in Egypt were even adding to these) but the fiefs granted to soldiers and to courtiers, originally on conditions of feudal service, in the course of time were freed from those encumbrances and were held in fee simple. The Middle East never developed a comprehensive feudal régime such as we may suspect to have prevailed in China under the Chou Dynasty, but grants of land were on a scale sufficient to build up a class of landowners, many of them small landowners, who acquired hereditary and, finally, absolute rights; and, as property changed hands freely, there resulted a mixed system with the great domains of king or temple neighboured by the fields and gardens of private landlords, even of small-holders. More than anything else does landed property persuade a man that he is independent and has a real stake in the country. When then we find, as we do in Babylonia, that apart from the regular farming class the townsman was prone to possess a vegetable plot or a field or two somewhere outside the city walls, we may fairly conclude that society was strongly individualistic and, at the same time, satisfied with its form of government. A Babylonian, and still more an Egyptian, would have regarded with incredulous horror the right of the Hittite community to sit in judgement on its sovereign; the conception of a limited monarchy was wholly alien to his experience and to his beliefs, nor would it have seemed to him to imply any higher social ideal; his own government was very properly autocratic, it exacted from him such dues as were necessary to the state's welfare, and it allowed him all the personal liberty that a man could ask.

It is well to remember that the immense progress in culture and in technical knowledge which has been described in our foregoing chapters had been crowded into a relatively brief space of time. In the Stone Age, although the sum total of advance had been revolutionary, its pace had been very slow, so that millennium had succeeded to millennium with barely perceptible

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change in man's estate. But in the Bronze Age a few centuries saw the world of the Middle East transformed. Material advance outstripped the growth of thought. Provided that a man was free to enjoy the comforts and advantages that ever-new inventions spread before his eyes he asked nothing more; he grasped at the 'bread and circuses' and cared not at all for political theories and ideals.

The good things of life were indeed manifest. The citizen was well lodged, after a fashion undreamed of in the preceding age. The Mesopotamian, even one of very moderate means, had a solidly built house adapted to his manner of life (*v.* Part II, Chapter II, p. 425), reasonably spacious, which guaranteed privacy and comfort and enabled him to entertain his friends; a permanent home, it enshrined the traditions of his family, and the setting enhanced his dignity as the head of the household and the high priest of its ancestral cult. The Egyptian man of rank lived in more palatial conditions, a walled garden surrounding the great house with its open loggias, its gaily-painted walls and columns, its bathrooms and separate quarters for the womenfolk; no one, in those flat and rainless lands, could have the channelled water that flushed the closets of Minos's palace, but the mere fact that such an amenity had been invented showed how keenly men appreciated the sophistications of domestic life. As early as the Twelfth Dynasty the Egyptian country house, though it might be flimsily built, aimed at civilized comfort, and its formal garden, its pergolas and ornamental tank where one could bathe were a delightful setting for the *al fresco* entertainment of guests. The Egyptian house, indeed, was not the family shrine which the more serious-minded Babylonian made of his home, but a place in which he could enjoy himself and to which he could invite his friends. The tomb paintings show us the banquets which in his life the dead man had loved to give; the tables are heaped with rich foods, fish and birds and joints of meat, cakes and fruit, and there are jars of wine whose seals bear the name and date of the vintage—'House of the High Priest of the Sun, year 9'—and perhaps its quality, 'very good'; the guests, both men and women, well dressed and finely perfumed, decked with jewels and with garlands of flowers hung round their necks, are not ashamed to drink to the point of intoxication, while musicians play and sing and naked girls amuse them with dances or acrobatic feats. It was such luxury as this that for the Egyptian constituted 'the good life'. Obviously it could be enjoyed only by the wealthy; but wealth and all that it brought depended upon the favour of Pharaoh, and there was no saying on whom that capricious favour might fall; even a slave might be raised to rank and riches, and a high officer of the court could declare, 'I was one whose family was poor, and whose town was small, but the Lord of Two Lands recognized me; I was accounted great in his heart'. Education opened the door to public service, and the humblest Egyptian of the middle class might warm himself with the dream that he would one day catch the eye of Pharaoh and rank amongst the great ones of the earth.[33]

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In other countries of the Middle East, where the form of government depended upon law and precedent rather than on the untrammelled caprice of the ruler, such opportunities of advance were limited, and the individual citizen found other means to self-expression. On the whole, this meant that a man relied more upon his own efforts and abilities than on the accidents of patronage, and he could choose various ways of employing them. He had to equip himself for success. A freeman of the lower class who followed a craft had, of course, to be a member of a guild; but when once he had served his apprenticeship he could set up as his own master, not wholly dependent upon any patronage as was the Egyptian, and in competition with his fellow-craftsmen profit by his skill. A boy of a better-class family would be sent to school—not necessarily a temple school—where the education would be of a fairly general type; he might be trained for the priesthood, or for the public service; he might even become a research scholar or a schoolmaster in his turn, but he might equally well look forward to a business career. Business and trade were, indeed, the main preoccupation of the townsman; they should bring him wealth, but in any case they were an outlet for his energies and a means of asserting his personality. Trade was regulated by the state, but the regulations were ultimately in the merchant's interest, and provided that he observed the law he was encouraged and protected by them; even where the state, i.e. the king or the temple, embarked on trade, the private dealer could compete with it on fair terms and not be overborne by official rivalry. In Babylonia—and the same was probably true in the essentially commercial Phoenician states—the merchant enjoyed a remarkable degree of freedom and displayed a corresponding initiative; the same man would speculate in business of many sorts and in the goods of many countries. He could travel freely and with reasonable safety, and in foreign parts had the backing of his own government, to whose resident political envoy he could appeal for such help as in modern times would be given by a consul;[14] it was to his interest to appreciate the arts and to learn the ways of lands other than his own, and since at every stage of his journeys he was bound to recognize and respect the local gods, he was likely to develop a broad-minded cosmopolitanism corresponding to the free cultural exchanges which, in the thirteenth century BC, seem to make for a Middle Eastern unity.

The liberty accorded to the merchant, and the liberal outlook with which we may credit him, did not intrude into the sphere of politics; engrossed in the exploitation of the resources open to him he had no time for abstractions and could recognize no conflict between individualism and divinely constituted authority. In the ancient civilizations, there could be no place for that rebellious protest ascribed by the Old Testament to the lawless horde of Hebrew runaways when 'the princes of the assembly, men of renown, gathered themselves together against Moses and against Aaron, saying, "Ye take too much upon you, seeing that all the congregation is holy, every one of them"'. Such independence of spirit, which is the germ of the democratic

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idea, could be given to the world only by a young people, not hidebound by the old traditions which civilized man took for granted. Experience had proved to him the value of those traditions; they had indeed worked amazingly well. Observing them, man had in the course of the Bronze Age created a new world wherein a decently ordered society could live, and even live in peace, enjoying wholly new standards of comfort; he had produced in sculpture and painting works of art which still command the admiration of the world and in literature poetry and prose worthy to survive—and which did survive because he had also invented the art of writing; in architecture he had discovered all the basic principles and had employed them in masterpieces. It is characteristic that in what we call the sciences his advance was purely pragmatic; his observations and experiments aimed at practical results, and if he could compile a calendar, dye his textiles, manufacture metal alloys, dose for a fever, calculate the area of a field or the cost of a building in materials, labour and time, he was satisfied; questions of cause and effect did not interest him—they simply were not his affair, for the processes of science were miraculous, and his success in them was due as much to prayers, charms and magic as to method. Similarly, he did not question the gods. As gods, they were not bound by the rules of conduct which social life necessarily imposed upon men; it was their indisputable power for good or evil that impelled man's obedience and worship, and for averting their anger sacrifice was better than obedience. They did demand of man the social virtues, because on society depended their own well-being—such was the natural explanation of the divine sanctions against crime; but even at this early stage an individual, or a generation, might occasionally glimpse a moral aspect of deity and in a penitential psalm invoke the forgiveness of god. But introspection of that kind was rare, little more than the morbid outcome of misfortune. While it would be unjust to condemn as grossly materialistic an age in which the love of beauty is an unmistakable feature, it must be recognized that, on the one hand, the tyranny of accepted and authoritarian religion closed the door on any true philosophy or any independence of thought, and, on the other, the adventure of re-shaping the world engrossed man's mind and afforded him full scope for self-development.

We have seen with what success Bronze Age man took advantage of his opportunities, and it may well be that by the end of the thirteenth century he had exhausted all the possibilities of his new material, working within the limitations of his society. New materials and new men, uninhibited by the old traditions, were needed for further advance. The Harappā civilization had collapsed in ruins and the future of north-west India was in the hands of the semi-barbarous Aryan invaders. The glories of Knossos had long since vanished. The rise of the warrior state of Assyria had reduced Babylonia to the rank of a second-rate power and although it had not destroyed its traditions had for the time being at least sapped its virility. Now the Hittite empire was to be wiped out. Egypt, after the final effort that saved her frontiers, could do



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no more;[15] she ceased to count as a pioneer of civilization and, nursing her memories, long stagnated in a world of progress to which she contributed nothing until such time as Babylonian and, later, Greek instructors put her in touch with modernity. All the great centres of Bronze Age civilization perished from foreign attack or fell behind through internal decadence, all save China only. There civilization was so deeply rooted in the land of its origin that wave after wave of savage invaders only brought in new blood and fresh energy to carry on the old traditions and to build upon the old foundations. At no moment of time did the accidents of history breach the continuity of Chinese culture; but in the western world, about 1200 BC, dramatic happenings were to mark the end of one age and the beginning of a new.

## NOTES TO CHAPTER XI

1. C. F. C. Hawkes, *The Prehistoric Foundations of Europe*, p. 381.
2. E. Herzfield in *Iran in the Ancient East* (Oxford, 1941), pp. 158 sq., suggests that these old prospectors, because of their value to the peoples through whose territories they passed, must have enjoyed some kind of safe-conduct. An exact analogy to this is provided by the *Solubiyeh*, an itinerant non-Moslem tribe of smiths in Syria and Arabia; they are despised as unclean, but travel freely over the different tribal areas and enjoy complete immunity.
3. Professor J. Leclant emphasizes the fact that the Egyptian was essentially defined by his religion, his integration into pharaonic society: it was the Pharaoh who realized the participation of the Egyptians in cosmos, the Pharaoh who made them, and them only, 'men' (*rmt*).
4. Professor I. M. Diakonoff doubts that the citizens of Babylonia thought of themselves as belonging to a Mesopotamian nation. The Phoenicians did not even have a common name in their own language; they were 'Tyrians', 'Sidonians', etc., but never 'Phoenicians'. The tribal connections of the Hebrews were stronger than their intertribal ties; they began to call themselves a 'chosen people' only later, and then exclusively on religious and not on 'nationalistic' grounds. Professor I. M. Diakonoff considers that what was important was that a man belonged to a certain community, and to a certain local or tribal cult. There were no 'nations' as we define them.
5. Professor I. M. Diakonoff here renews his doubts as to the existence of national states at this time. The Hittite kingdom was not a national state nor was the Kassite kingdom. What united Babylonia and to a certain extent Egypt was a common system of irrigation, not national feeling; the small states of Syro-Phoenicia were not national states; Assyria had a mixed population and its kings, beginning with Tiglatpileser I (twelfth century BC), having conquered a territory, used to count the population among the people of Assur, disregarding the ethnic and linguistic character of the conquered.
6. At least this is what he thought. But the peace did not last. See pp. 837–8.
7. According to the Egyptian story, which is not necessarily true.
8. Professor I. M. Diakonoff observes that in Mesopotamia the law at this time consisted of (*a*) customary law developed in the legal practice of the courts and as councils of elders, assemblies, etc., or (*b*) royal ordinances which might be collected in such documents as the 'Laws of Ur-Nammu' and the 'Laws of Hammurabi'. If citizens felt that the customary law was unjust they could appeal to the king who might issue an ordinance for the particular case concerned or promulgate a new law.

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9. Professor I. M. Diakonoff notes that Hammurabi had limited slavery for debt to a term of three years. However, both before and after Hammurabi, slavery for debt was practically slavery for life.

10. There were periods of anarchy in Egypt, but these were due not to any rising of the proletariat against the régime but either to foreign invasion or to the ambition of hereditary nomarchs anxious to become Pharaohs. The upsetting of social ranks which the poets bewail (cf. Ch. X, p. 806) resulted from the favouritism shown to 'new men', the adherents of a successful upstart, at the expense of the old official class. None of these changes affected the constitution in any way.

11. Professor I. M. Diakonoff considers that the state was run for the benefit of the ruling class and sometimes for the benefit of a tyrant, whatever the ideological justification. Society was divided into freemen and slaves. But the freemen themselves belonged to different classes and the class division was perpetuated by the state. An Egyptian of these times was a responsible member of the state in a limited sense only: he had many duties and few rights.

12. Professor I. M. Diakonoff observes that the communal system still persisted in many countries such as, for instance, Assyria. The rights of the proprietor were restricted, i.e. they were combined with duties toward the community such as keeping up the irrigation system. The land of the small owners was land granted by the community, not land granted by the king or temple.

13. Professor I. M. Diakonoff remarks that education cost money and was in most cases practically inaccessible to the poor. Professor Ralph Turner points out, however, that during the Middle Kingdom and New Kingdom education increasingly became a means of climbing the social ladder, even for the poor; see H. Brunner, *Altägyptische Erziehung* (Wiesbaden, 1957), pp. 40–2.

14. Professor I. M. Diakonoff points out that the risks were sometimes great. Even the envoys of the kings in El Amarna times were subject to assaults on the way. Such envoys were often mere hostages in the hands of the foreign king.

15. Professor J. Leclant does not consider that Egypt ceases to make a contribution to civilization after the second millennium. In the eighth and seventh centuries BC Egypt enjoyed a magnificent renaissance. During the Ethiopian and Saite periods and in late Egyptian times, even under the Macedonian and Roman Pharaohs, Egypt produced much that is worthy of admiration. This was the Egypt in which Herodotus stayed and Plato studied.

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VOLUME ONE

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